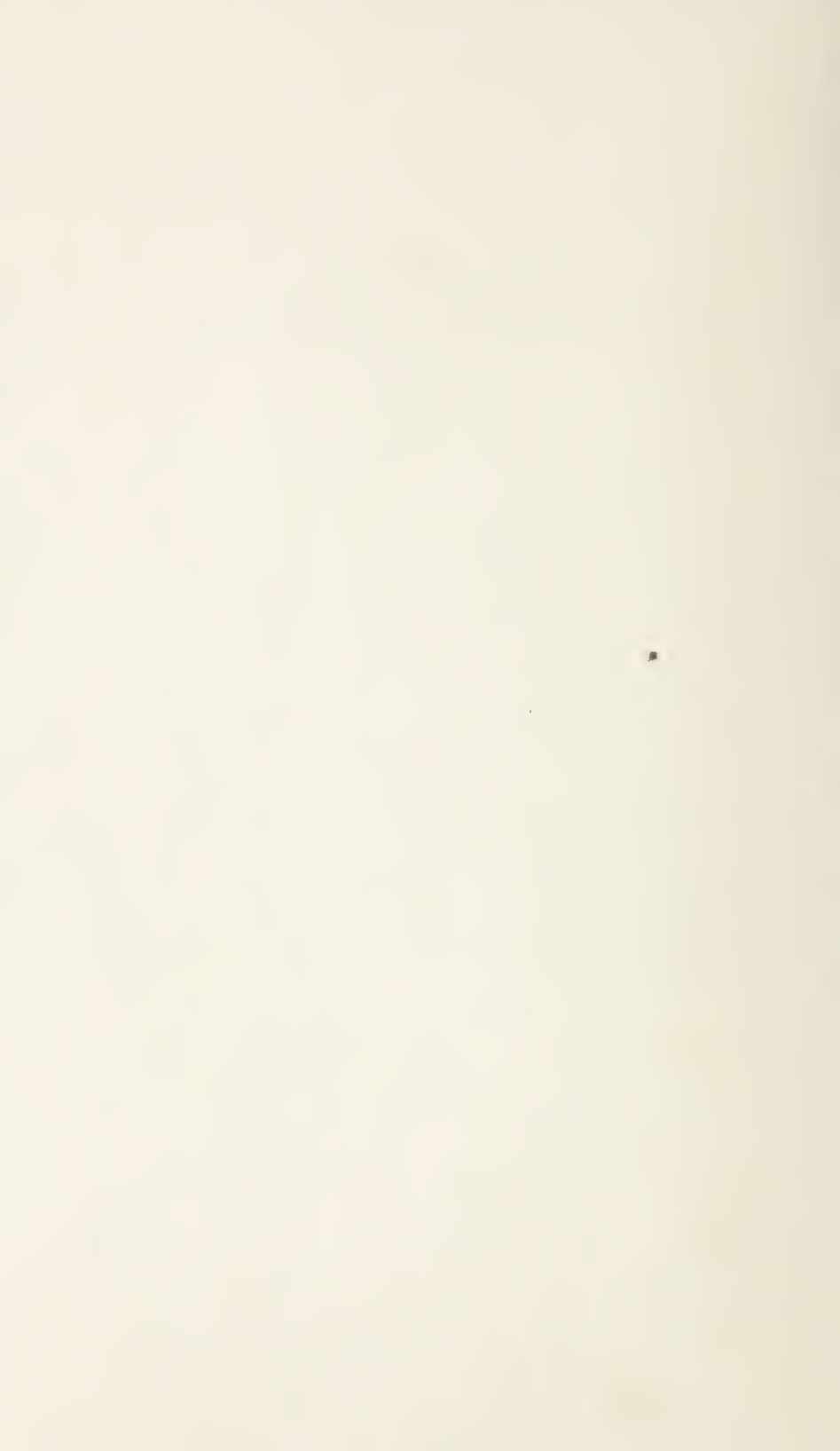


BRIGHAM YOUNG UNIVERSITY BULLETIN



The Graduate School 1963 - 1964 CATALOG



Brigham Young University Bulletin



Graduate School Issue

1963-64

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Provo, Utah

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University Calendar

1963-64

Although as accurate as possible at the time of the printing of this catalog, the calendar is subject to change at the discretion of the University administration.

First Semester

September 12, 13 (Thursday, Friday): Utah Conference on Higher Education.

September 14, 15, 16 (Saturday, Sunday, Monday): Student leadership conference.

September 16, 17 (Monday, Tuesday): Faculty Workshop.

September 21 (Saturday): New student registration.

September 23, 24 (Monday, Tuesday): Registration for all regular and special students.

September 25 (Wednesday): Class instruction begins.

October 11 (Friday): Last day on which late registration may occur for First Semester and for adding and dropping classes.

November 2 (Saturday): Homecoming.

November 9 (Saturday): Midsemester registration for courses available to students on special authorization.

November 28, 29 (Thursday, Friday): Thanksgiving recess.

December 18 (Wednesday) through January 3 (Friday): Christmas recess.

January 25, 27, 28, 29, 30 (Saturday, Monday, Tuesday, Wednesday, Thursday): First Semester examination period.

Second Semester

February 1 (Saturday): New student orientation.

February 3, 4 (Monday, Tuesday): Registration for Second Semester.

February 5 (Wednesday): Class instruction begins.

February 21 (Friday): Last day on which late registration may occur for Second Semester and for adding and dropping classes.

March 28 (Saturday): Midsemester registration for courses available to students on special authorization.

April 29 (Wednesday): "Y" Day.

May 23, 25, 26, 27, 28 (Saturday, Monday, Tuesday, Wednesday, Thursday): Second Semester examination period.

May 28 (Thursday): Baccalaureate services.

May 29 (Friday): Commencement exercises.

Summer Session, 1964

June 8, 9, 10, 11, 12 (Monday, Tuesday, Wednesday, Thursday, Friday): Education Week.

June 15 (Monday): Registration.

June 16 (Tuesday): First Term begins.

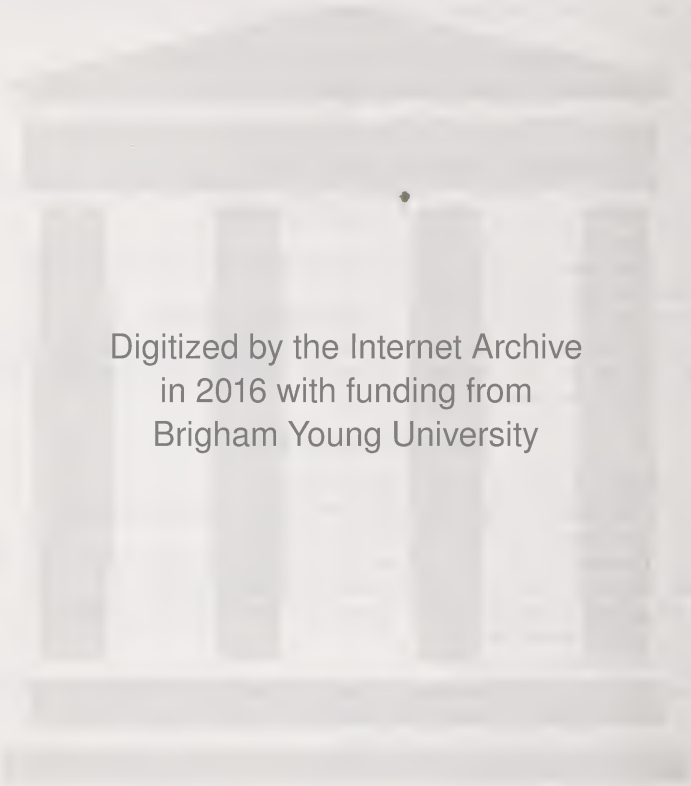
July 17 (Friday): First Term ends.

July 20 (Monday): Second Term begins.

July 24 (Friday): State holiday observed.

August 21 (Friday): Second Term ends.

August 21 (Friday) Eighty-ninth summer convocation held.



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Administration and Faculty

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Administrator of Seminaries and Institutes	William E. Berrett
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Vice-President in Charge of Auxiliary Services	Ben E. Lewis
Vice-President and General Counsel	Clyde D. Sandgren
Vice-President	Harvey L. Taylor
Comptroller	Joseph T. Bentley
Assistant Administrator of Seminaries and Institutes	Dale T. Tingey
Assistant Administrator of Seminaries and Institutes	Alma P. Burton
Dean of Students	J. Elliot Cameron

Graduate School

Dean of the Graduate School	Wesley P. Lloyd
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Deans of Colleges

Biological and Agricultural Sciences	Rudger H. Walker
Business	Weldon J. Taylor

Education	Antone K. Romney
Family Living	Virginia F. Cutler
Fine Arts	Conan E. Mathews
General College	Ernest C. Jeppsen
Humanities and Social Sciences	John T. Bernhard
Nursing	Beulah Ream Allen
Physical and Engineering Sciences	Armin J. Hill
Physical Education	Milton F. Hartvigsen
Religious Instruction	B. West Belnap

Deans and Directors of General Areas

Admissions and Records	William R. Siddoway
Adult Education and Extension Services	Harold Glen Clark
Dean of Students	J. Elliot Cameron
Director of Research	H. Tracy Hall
Director of Summer School	Dean A. Peterson

Graduate Council

Representatives of Academic Areas

- Jay V. Beck, Biological and Agricultural Sciences. Term expires September 1, 1963.
 Robert J. Smith, Business. Term expires September 1, 1963.
 Keith R. Oakes, Education. Term expires September 1, 1963.
 Kenneth L. Cannon, Family Living. Term expires September 1, 1964.
 Clawson Cannon, Jr., Fine Arts. Term expires September 1, 1963.
 Eugene E. Campbell, Humanities and Social Sciences. Term expires September 1, 1964.
 Kenneth R. Hardy, Social Sciences. Term expires September 1, 1965.
 Lehi F. Hintze, Physical and Engineering Sciences. Term expires September 1, 1964.
 Israel C. Heaton, Physical Education. Term expires September 1, 1964.
 Chauncey C. Riddle, Religious Instruction. Term expires September 1, 1965.

Members at Large

- Mark K. Allen. Term expires September 1, 1963.
 Reed H. Bradford. Term expires September 1, 1964.
 Bertrand F. Harrison. Term expires September 1, 1964.
 H. Tracy Hall, Director of Research.
 Wesley P. Lloyd, Dean, Graduate School, Chairman.
 Albert D. Swensen. Term expires September 1, 1965.

Ex Officio

- Earl C. Crockett, Academic Vice-President.
 Lyman Tyler, Director of Libraries.

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Accounting	Bryce B. Orton
Agricultural Economics	Ivan L. Corbridge
Agronomy	Raymond Farnsworth
Animal Husbandry	R. Phil Shumway
Archaeology	Ross T. Christensen
Art	Richard L. Gunn
Bacteriology	Richard D. Sagers

Botany	Bertrand F. Harrison
Business Education and Office Management	R. DerMont Bell
Business Management	Sterling D. Sessions
Chemical Engineering Science	Dee H. Barker
Chemistry	Loren C. Bryner
Civil Engineering Science	Cliff S. Barton
Dramatic Arts	Harold I. Hansen
Economics	Willard B. Doxey
Electrical Engineering Science	Darrel J. Monson
English	Bruce B. Clark
Family Life Education	Blaine R. Porter
Food and Nutrition	Marion Bennion
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Geology	Lehi F. Hintze
Graduate Department of Education	Robert L. Egbert
Graduate Studies in Religious Instruction	Chauncey C. Riddle
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Languages	R. Max Rogers
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Physical Education for Women	Leona Holbrook
Physics	Dwight R. Dixon
Political Science	Mark W. Cannon
Psychology	Robert J. Howell
Recreation	Israel C. Heaton
Sociology and Anthropology	Joseph N. Symons
Speech	Morris M. Clinger
Statistics	Melvin W. Carter
Youth Leadership	Thane J. Packer
Zoology and Entomology	D Elden Beck

The Faculty of the Graduate School

The faculty of the Graduate School consists of members of the general faculty who are approved by the dean of the Graduate School from among those who hold the rank of professor or associate professor, or assistant professor with a doctoral degree. For special reason related to exceptional qualification, the Graduate Council is authorized to appoint to the Graduate Faculty, a member who does not hold the doctoral degree.

- George M. Addy** Associate Professor of History (1957)
B.A., M.A., Brigham Young University, 1948, 1950; Ph.D., Duke University, 1957.
- A. Lester Allen** Associate Professor of Zoology (1954)
B.A., Ph.D., University of California at Los Angeles, 1946, 1951.

- Mark K. Allen** Professor of Psychology (1946)
B.A., Brigham Young University, 1926; M.A., Ph.D., Stanford University, 1935, 1955.
- *Stephen L. Alley** Professor of Education (1956)
B.S., M.S., University of Utah, 1947, 1951; Ed.D. Harvard University, 1958.
- Donald M. Allred** Associate Professor of Zoology and Entomology (1956)
B.A., M.A., Brigham Young University, 1950, 1951; Ph.D. University of Utah, 1954.
- R. Chase Allred** Associate Professor of Agronomy (1955)
B.S., Brigham Young University, 1948; M.S., Kansas State College, 1949; Ph.D., University of Nebraska, 1952.
- Keith P. Anderson** Professor of Chemistry (1953)
B.A., Brigham Young University, 1946; Ph.D., Cornell University, 1950.
- Richard L. Anderson** Associate Professor of History and Scripture (1955)
B.A., M.A., Brigham Young University, 1951, 1957; LL.B., Harvard University, 1954; Ph.D., University of California at Berkeley, 1962.
- Vernon L. Anderson** Associate Professor of Modern Languages (1956)
B.A., M.A., University of Utah, 1948, 1949; Ph.D., Stanford University, 1954.
- Hyrum L. Andrus** Associate Professor of Scripture (1956)
B.S., Ricks College, 1951; M.S., Brigham Young University, 1952; D.S.S., Syracuse University, 1955.
- J. Roman Andrus** Professor of Art and Education (1943)
B.S., M.S., Brigham Young University, 1942, 1943; Ed.D., University of Colorado, 1958; Art Students League, L.A. Art Institute.
- Clarence D. Ashton** Associate Professor of Horticulture and Horticultural Specialties (1951)
B.S., Brigham Young University, 1929.
- Hyrum J. Babcock** Associate Professor of Education (1954)
B.A., M.A., Ph.D., University of California, 1939, 1940, 1953.
- Milton V. Backman, Jr.** Associate Professor of History of Religion (1960)
B.S., M.A., University of Utah, 1954, 1955; Ph.D., University of Pennsylvania, 1959.
- Sherwin H. Baer** Assistant Professor of Speech and Hearing (1962)
B.S., University of Utah, 1954; M.S., Brigham Young University, 1955; Ph.D., Ohio State University, 1958.
- Bertrand L. Ball, Jr.** Assistant Professor of Languages (1962)
B.A., University of Redlands, 1953; M.S., Ph.D., University of Southern California, 1958, 1960.
- Ariel S. Ballif** Professor of Sociology (1938)
B.S., Brigham Young University, 1925; M.A., Ph.D., University of Southern California, 1937, 1945.
- Jae R. Ballif** Assistant Professor of Physics (1962)
B.S., Brigham Young University, 1953; Ph.D., University of California at Los Angeles, 1962.
- Dee H. Barker** Professor of Chemical Engineering (1959)
B.S., Ph.D., University of Utah, 1948, 1951.
- J. Dean Barnett** Associate Professor of Physics (1958)
B.A., Ph.D., University of Utah, 1954, 1959.
- Owen L. Barnett** Associate Professor of Educational Administration (1950)
B.S., M.S., Brigham Young University, 1923, 1927.
- Howard H. Barron** Associate Professor of Religious Education (1953)
B.S., M.S., Utah State University, 1943, 1950; Ed.D., University of Utah, 1953.
- Davis Bartholomew** Professor of Electrical Engineering (1954)
B.S., University of Utah, 1928; M.S., University of Minnesota, 1940; P.E.E., University of Utah, 1948.
- Cliff S. Barton** Professor of Civil Engineering (1959)
B.S., Utah State University, 1947; M.S., Ph.D., Rensselaer Polytechnic Institute, 1953, 1958.

- J. LaVar Bateman** Professor of Speech (1949)
B.A., Brigham Young University, 1941; M.S., Ph.D., University of Wisconsin, 1947, 1950.
- Edith B. Bauer** Professor of Educational Psychology (1945)
B.A., M.A., Brigham Young University, 1930, 1946; Ph.D., University of California at Berkeley, 1956.
- Leland K. Baxter** Professor of Mechanical Engineering (1953)
B.S., University of New Mexico, 1948; M.S., Ph.D., Purdue University, 1952, 1953.
- D Elden Beck** Professor of Zoology and Entomology (1938)
B.A., M.A., Brigham Young University, 1929, 1930; Ph.D., Iowa State College, 1933.
- Jay V. Beck** Professor of Bacteriology (1951)
B.A., M.A., Brigham Young University, 1933, 1936; Ph.D., University of California at Berkeley, 1940.
- R. DerMont Bell** Associate Professor of Business Education and Office Management (1957)
B.S., M.S., Brigham Young University, 1955, 1956; Ph.D., University of California, 1960.
- B. West Belnap** Professor of Religious Education; Dean of the College of Religious Instruction (1951)
B.S., Brigham Young University, 1946; M.A., Ed.D., Columbia University, 1950, 1951.
- Marion Bennion** Professor of Food and Nutrition (1952)
B.S., Utah State University, 1947; M.S., Teachers College, Columbia University, 1949; Ph.D., University of Wisconsin, 1956.
- Robert C. Bennion** Assistant Professor of Psychology (1961)
B.A., Brigham Young University, 1956; M.A., Ph.D., Ohio State University, 1959, 1961.
- Joseph T. Bentley** Comptroller; Associate Professor of Accounting
B.S., M.S., Brigham Young University, 1928, 1954; C.P.A., State of Utah, 1946.
- John T. Bernhard** Professor of Political Science; Dean of the College of Humanities and Social Sciences (1959)
B.S., Utah State University, 1941; M.A., Ph.D., University of California at Los Angeles, 1949, 1951.
- William E. Berrett** Vice-President; Professor of Religion
B.A., LL.B., University of Utah, 1924, 1933.
- Harold J. Bissell** Professor of Geology (1938)
B.S., Brigham Young University, 1934; M.S., Ph.D., University of Iowa, 1936, 1948.
- Angus U. Blackham** Professor of Chemistry (1952)
B.A., Brigham Young University, 1949; M.A., Ph.D., University of Cincinnati, 1950, 1952.
- Reed H. Bradford** Professor of Sociology (1946)
B.A., Brigham Young University, 1937; M.A., Louisiana State University, 1939; M.A., Ph.D., Harvard University, 1941, 1946.
- Merrill Kay Bradshaw** Assistant Professor of Music (1957)
B.A., M.A., Brigham Young University, 1954, 1955; M.Mus., D.Mus.A., University of Illinois, 1956, 1962.
- Willard H. Bradshaw** Assistant Professor of Bacteriology (1961)
B.S., M.S., Brigham Young University, 1952, 1953; Ph.D., University of California, 1957.
- Ralph A. Britsch** Professor of English (1938)
B.A., M.A., Brigham Young University, 1933, 1951.
- H. Smith Broadbent** Professor of Chemistry (1946)
B.S., Brigham Young University, 1942; Ph.D., Iowa State College, 1946.
- Thomas H. Brown** Assistant Professor of Languages (1959)
B.A., Brigham Young University, 1955; M.A., Ph.D., University of Illinois, 1957, 1960.
- Loren C. Bryner** Professor of Chemistry (1935)
B.S., M.S., Brigham Young University, 1928, 1930; Ph.D., Iowa State College, 1934.

- Kenneth C. Bullock** Professor of Geology (1943)
B.S., M.A., Brigham Young University, 1940, 1942; Ph.D., University of Wisconsin, 1949.
- Percy E. Burrup** Professor of Educational Administration (1952)
B.S., M.S., Utah State University, 1932, 1941; Ed.D., Colorado State College of Education, 1951.
- Alma P. Burton** Assistant Administrator of Seminaries and Institutes
Professor of Religion (1948)
B.S., Utah State University, 1948; M.S., Brigham Young University, 1950; Ed.D., University of Utah, 1957.
- Jess R. Bushman** Assistant Professor of Geology (1955)
B.A., Brigham Young University, 1949; Ph.D., Princeton University, 1959.
- Richard L. Bushman** Assistant Professor of History (1960)
B.A., Ph.D., Harvard University, 1955, 1961.
- Eliot A. Butler** Associate Professor of Chemistry (1956)
B.S., Ph.D., California Institute of Technology, 1952, 1956.
- Sterling G. Callahan** Professor of Education (1953)
B.A., Brigham Young University, 1937; M.A., George Washington University, 1947; Ed.D., University of Virginia, 1953.
- Eugene E. Campbell** Professor of History (1956)
B.A., M.A., University of Utah, 1939, 1940; Ph.D., University of Southern California, 1952.
- Jennie Campbell** Associate Professor of Education (1952)
B.S., Brigham Young University, 1928; M.A., Teachers College, Columbia University, 1937.
- Clawson Y. Cannon, Jr.** Assistant Professor of Music (1949)
B.M., Eastman School of Music, University of Rochester, 1948; Diploma, Konservatorium Zurich, 1953; B.A., M.A., Brigham Young University, 1954, 1955.
- Clawson Y. Cannon, Sr.** Professor of Animal Husbandry (1956)
B.S., Utah State University, 1913; M.S., Ph.D., Iowa State College, 1924, 1927.
- Kenneth L. Cannon** Professor of Human Development and Family Relationships (1956)
B.S., Brigham Young University, 1935; M.S., Ph.D., Iowa State College, 1948, 1954.
- Mark W. Cannon** Associate Professor of Political Science (1960)
B.A., University of Utah, 1949; M.P.A., M.A., Ph.D., Harvard University, 1953, 1954, 1961.
- Melvin W. Carter** Associate Professor of Statistics (1961)
B.S., Arizona State University, 1952; M.S., Ph.D., North Carolina State, 1954, 1956.
- Arthur O. Chapman** Associate Professor of Zoology (1959)
B.A., Brigham Young University, 1941; M.A., University of Kansas, 1949; Ph.D., University of Nebraska, 1953.
- Thomas E. Cheney** Associate Professor of English (1945)
B.S., Utah State University, 1930; M.A., University of Idaho, 1936.
- Dean C. Christensen** Professor of Education (1957)
B.S., M.S., Utah State University, 1938, 1948; Ed.D., University of Oregon, 1957.
- Earl M. Christensen** Professor of Botany
B.S., M.S., University of Utah, 1947, 1949; Ph.D., University of Wisconsin, 1954.
- Edward L. Christensen** Professor of Business Education and Office Management (1953)
B.S., M.S., Ph.D., University of Utah, 1938, 1939, 1953.
- James J. Christensen** Associate Professor of Chemical Engineering (1957)
B.S., M.S., University of Utah, 1953, 1956; Ph.D., Carnegie Institute of Technology, 1957.
- Lillian A. Christensen** Associate Professor of Education (1950)
B.S., University of Utah, 1938; M.S., Brigham Young University, 1957; Ph.D., Western Reserve University, 1958.

- Parley A. Christensen** Professor of English (1927)
B.S., Utah State University, 1914; M.A., Ph.D., Stanford University, 1925, 1927.
- Ross T. Christensen** Associate Professor of Archaeology (1952)
B.A., M.A., Brigham Young University, 1943, 1947; Ph.D., University of Arizona, 1956.
- John R. Christiansen** Associate Professor of Sociology (1957)
B.S., M.S., Utah State University, 1949, 1952; Ph.D., University of Wisconsin, 1955.
- Bruce B. Clark** Professor of English (1950)
B.A., University of Utah, 1943; M.A., Brigham Young University, 1948; Ph.D., University of Utah, 1951.
- David Leigh Clark** Associate Professor of Geology (1959)
B.S., M.S., Brigham Young University, 1953, 1954; Ph.D., University of Iowa, 1957.
- Harold Glen Clark** Professor of Education; Dean of Adult Education
and Extension Services (1946)
B.S., Brigham Young University, 1928; M.S., University of Southern California, 1934;
Ed.D., George Washington University, 1942.
- Herald R. Clark** Professor of Finance and Banking (1913)
B.A., Brigham Young University, 1918; M.B.A., University of Washington, 1924.
- J. Reuben Clark, III** Associate Professor of Modern Languages (1941)
B.A., University of Utah, 1934.
- James R. Clark** Associate Professor of Religious Education (1938)
B.A., M.A., Brigham Young University, 1936, 1944; Ed.D., Utah State University, 1958.
- Marden J. Clark** Associate Professor of English (1949)
B.A., M.A., Brigham Young University, 1948, 1949; Ph.D., University of Washington, 1957.
- Monroe H. Clark** Associate Professor of Philosophy of Education
and Guidance (1945)
B.A., Columbia University, 1923; M.A., Brigham Young University, 1927.
- Wayne W. Clark** Associate Professor of Economics (1962)
B.A., Brigham Young University, 1952; Ph.D., Texas A&M, 1960.
- *A. John Clarke** Professor of Secondary Education (1938)
B.S., M.S., Brigham Young University, 1938, 1942; Ed.D., Colorado University, 1950.
- John C. Clegg** Associate Professor of Electrical Engineering (1961)
B.S., M.S., Ph.D., University of Utah, 1949, 1954, 1957.
- Coran L. Cluff** Assistant Professor of Chemistry (1960)
B.S., Arizona State College, 1952; M.S., Ph.D., University of Michigan, 1955, 1960.
- Lane A. Compton** Associate Professor of Physical Science Education (1953)
B.S., M.S., Ed.D., University of Utah, 1943, 1951, 1955.
- Leslie M. Cooper** Assistant Professor of Psychology (1962)
B.S., M.S., Brigham Young University, 1954, 1958; Ph.D., University of Illinois, 1962.
- Ivan L. Corbridge** Associate Professor of Economics (1952)
B.A., Utah State University, 1946; M.S., University of Chicago, 1948; Ph.D., Washington State College, 1952.
- Richard O. Cowan** Assistant Professor of History of Religion (1961)
B.A., Occidental College, 1958; M.A., Ph.D., Stanford University, 1959, 1961.
- Lars G. Crandall** Associate Professor of Business Education
and Office Management (1944)
B.S., M.S., Brigham Young University, 1944, 1945; Ed.D., Colorado State Teachers College, 1960.
- John K. Crnkovic** Assistant Director of the Laboratory Schools for
Curriculum and Teaching; Associate Professor of Education (1957)
B.A., Willamette University, 1930; M.A., University of Michigan, 1940; Ed.D., Arizona State College, 1956.

- Earl C. Crockett** Vice-President; Professor of Economics
B.S., University of Utah, 1927; Ph.D., University of California, 1931.
- Evan M. Croft** Associate Professor of Business Education
and Office Management (1936)
B.S., Brigham Young University, 1929; M.S., University of Southern California, 1940.
- Bert P. Cundick** Assistant Professor of Psychology (1962)
B.A., M.S., University of Utah, 1957, 1959; Ph.D., Ohio State University, 1962.
- Robert M. Cundick** Assistant Professor of Music (1957)
B.F.A., M.F.A., Ph.D., University of Utah, 1949, 1950, 1955.
- Virginia F. Cutler** Professor of Housing and Home Management;
Dean of the College of Family Living (1961)
B.S., University of Utah, 1926; M.A., Stanford University, 1937; Ph.D., Cornell University, 1936.
- Delva Daines** Associate Professor of Education (1955)
B.S., M.S., Utah State University, 1940, 1947; Ed.D., Washington State University, 1956.
- Philip B. Daniels** Assistant Professor of Psychology (1961)
B.S., M.S., Brigham Young University, 1954, 1957; Ph.D., Harvard University, 1962.
- J. Kenneth Davies** Associate Professor of Economics (1953)
B.S., Marquette University, 1945; M.S., Brigham Young University, 1950; Ph.D., University of Southern California, 1959.
- C. Edwin Dean** Associate Professor of Mathematics (1949)
B.S., M.S., Brigham Young University, 1947, 1952; M.S., University of Michigan, 1955.
- Daniel Decker** Associate Professor of Physics (1958)
B.S., M.S., Brigham Young University, 1953, 1955; Ph.D., University of Illinois, 1958.
- Gerrit de Jong, Jr.** Professor of Modern Languages; Dean
Emeritus, College of Fine Arts (1925)
B.A., M.A., University of Utah, 1920, 1925; Ph.D., Stanford University, 1933.
- William E. Dibble** Assistant Professor of Physics (1961)
B.S., Ph.D., California Technology, 1954, 1960.
- Dwight R. Dixon** Associate Professor of Physics (1959)
B.S., Utah State University, 1942; Ph.D., University of California, 1955.
- David M. Donaldson** Professor of Bacteriology (1959)
B.S., M.S., Ph.D., University of Utah, 1950, 1952, 1954.
- G. Byron Done** Professor of Scripture (1956)
B.A., University of Utah, 1928; M.A., Ph.D., University of Southern California, 1937, 1939.
- Lester N. Downing** Professor of Personnel and Guidance (1954)
B.S., M.S., Utah State University, 1947, 1949; Ed.D., Colorado State College of Education, 1951.
- Roy W. Doxey** Associate Professor of Scripture (1948)
B.A., M.A., George Washington University, 1938, 1940.
- Willard B. Doxey** Associate Professor of Economics (1956)
B.S., M.S., University of Utah, 1937, 1947; Ph.D., University of California at Berkeley, 1956.
- J. Duane Dudley** Associate Professor of Physics (1956)
B.S., Brigham Young University, 1952; M.A., Rice Institute, 1953; Ph.D., University of Utah, 1959.
- William G. Dyer** Associate Professor of Sociology (1955)
B.A., M.A., Brigham Young University, 1950, 1952; Ph.D., University of Wisconsin, 1955.
- Don L. Earl** Professor of Music (1955)
B.A., M.A., Brigham Young University, 1940, 1947; Ph.D., Indiana University, 1952.

- E. John Eastmond** Professor of Physics (1951)
B.A., Brigham Young University, 1937; Ph.D., University of California at Berkeley, 1943.
- Robert L. Egbert** Professor of Educational Psychology (1955)
B.S., M.S., Utah State University, 1947, 1948; Ph.D., Cornell University, 1949.
- Richard Grant Ellsworth** Assistant Professor of English (1958)
B.A., M.A., Brigham Young University, 1951, 1952; Ph.D., University of Maryland, 1958.
- Glenn L. Enke** Professor of Civil Engineering (1962)
B.S., University of California, 1928.
- Dean B. Farnsworth** Professor of English (1953)
B.A., M.A., University of Utah, 1946, 1947; Ph.D., University of California at Berkeley, 1950.
- Raymond B. Farnsworth** Professor of Agronomy (1946)
B.S., Brigham Young University, 1937; M.S., Massachusetts State College, 1938; Ph.D., Ohio State University, 1941.
- Lawrence Fearnley** Associate Professor of Mathematics (1957)
B.S., London University, 1953; Ph.D., University of Utah, 1959.
- D. Allen Firmage** Professor of Engineering (1955)
B.S.C.E., University of Utah, 1940; M.S., Massachusetts Institute of Technology, 1941.
- Royce P. Flandro** Assistant Professor of Education (1953)
B.S., M.S., University of Utah, 1948, 1950; Ed.D., University of Indiana, 1957.
- Harvey Fletcher** Professor of Physics (1952)
B.S., Brigham Young University, 1907; Ph.D., Chicago University, 1911; hon. Sc.D., Columbia University, 1935; hon. Sc.D., Kenyon College, 1942; hon. Sc.D., Stevens Institute of Technology, 1942; hon. Sc.D., Brigham Young University, 1954.
- Marvin H. Folsom** Assistant Professor of Languages (1960)
B.A., M.A., Brigham Young University, 1951, 1955; Ph.D., Cornell University, 1961.
- Herbert H. Frost** Associate Professor of Zoology (1960)
B.A., M.A., Brigham Young University, 1941, 1947; Ph.D., Cornell University, 1955.
- Dean K. Fuhrman** Professor of Engineering (1954)
B.S., M.S., Utah State University, 1941, 1950; Ph.D., University of Wisconsin, 1952.
- John H. Gardner** Professor of Physics (1949)
B.S., Utah State University, 1943; M.A., Ph.D., Harvard University, 1947, 1950.
- Byron W. Gassman** Assistant Professor of English (1960)
B.A., Brigham Young University, 1955; M.A., Ph.D., University of Chicago, 1956, 1960.
- *Crawford Gates** Professor of Music (1948)
B.A., San Jose State College, 1944; M.A., Brigham Young University, 1948; Ph.D., Eastman School of Music, University of Rochester, 1954.
- David D. Geddes** Professor of Physical Education and Health (1952)
B.S., M.S., Brigham Young University, 1950, 1952; Ph.D., University of Southern California, 1959.
- M. Carl Gibson** Associate Professor of Modern and Classical Languages (1949)
B.A., M.A., Brigham Young University, 1947, 1949; Ph.D., University of Oregon, 1960.
- Lt. Colonel William J. Gibson** Professor of Air Science (1959)
B.S., Utah State University, 1948.
- Preston R. Gledhill** Professor of Dramatic Arts (1947)
Degré Supérieur, La Sorbonne, 1938; B.A., Brigham Young University, 1939; M.A., Louisiana State University, 1940; Ph.D., University of Wisconsin, 1951.
- J. Rex Goates** Professor of Chemistry (1947)
B.S., Brigham Young University, 1942; Ph.D., University of Wisconsin, 1947.

- A. Harold Goodman** Associate Professor of Music (1960)
B.A., University of Arizona, 1947; M.A., Ed.D., University of Southern California, 1951, 1960.
- Stewart L. Grow** Professor of History and Political Science; Director,
Institute of Government Service (1947)
B.S., M.S., Brigham Young University, 1935, 1948; Ph.D., University of Utah, 1954.
- Clark J. Gubler** Professor of Chemistry (1958)
B.A., Brigham Young University, 1939; M.A., University of Southern California, 1941; Ph.D., University of California, 1945; Established Investigator of the American Heart Association, 1960.
- Richard L. Gunn** Associate Professor of Art and Education (1948)
B.S., M.S., Brigham Young University, 1947, 1950; Ed.D., Stanford University, 1955.
- LeRoy R. Hafen** Professor of History (1954)
B.A., Brigham Young University, 1916; M.A., University of Utah, 1919; Ph.D., University of California, 1924; Litt.D., University of Colorado, 1935.
- Richard W. Hales** Professor of Physics (1952)
B.S., Iowa State College, 1946; Ph.D., University of California, 1952.
- Wayne B. Hales** Professor of Physics and Mathematics; Dean
of General College (1930)
B.A., Brigham Young University, 1916; M.A., University of Utah, 1922; Ph.D., California Institute of Technology, 1926.
- H. Tracy Hall** Professor of Chemistry, Director of the Research
Division (1955)
B.S., M.S., Ph.D., University of Utah, 1942, 1943, 1948.
- John R. Halliday** Professor of Music (1936)
B.A., M.A., Brigham Young University, 1935, 1936; Ph.D., Eastman School of Music, University of Rochester, 1941.
- *George H. Hansen** Professor of Geology and Geography (1927)
B.S., Utah State University, 1918; M.S., Ph.D., George Washington University, 1925, 1927.
- Harold I. Hansen** Professor of Dramatic Arts (1952)
B.S., Utah State University, 1937; M.A., Ph.D., State University of Iowa, 1940, 1949.
- Terrence L. Hansen** Professor of Languages (1960)
B.A., University of Utah, 1946; M.A., Ph.D., Stanford University, 1948, 1951.
- Kenneth R. Hardy** Professor of Psychology (1954)
B.A., M.A., University of Utah, 1948, 1949; Ph.D., University of Michigan, 1954.
- Callis R. Harms** Assistant Professor of Educational Administration (1960)
B.S., M.Ed., Brigham Young University, 1952, 1956; Ed.D., Arizona State University, 1961.
- James M. Harris** Associate Professor of Educational Psychology (1955)
B.S., M.S., Utah State University, 1952, 1953; Ph.D., Cornell University, 1955.
- Bertrand F. Harrison** Professor of Botany (1929)
B.S., M.S., Brigham Young University, 1930, 1931; Ph.D., University of Chicago, 1937.
- Charles J. Hart** Professor of Recreation and of Physical and Health
Education (1925)
B.S., Utah State University, 1922; M.A., Ed.D., New York University, 1932, 1945.
- Edward L. Hart** Professor of English (1952)
B.S., University of Utah, 1939; M.A., University of Michigan, 1941; D. Phil., Oxford University (England), 1950.
- Milton F. Hartvigsen** Professor of Physical Education; Dean of the College
of Physical Education (1956)
B.S., M.Ed., Utah State University, 1930, 1939; Ed.D., University of California at Los Angeles, 1956.
- Richard T. Hawkins** Assistant Professor of Chemistry (1959)
B.A., Brigham Young University, 1951; Ph.D., University of Illinois, 1959.
- C. Lynn Hayward** Professor of Zoology (1930)
B.S., M.S., Brigham Young University, 1927, 1931; Ph.D., University of Illinois, 1941.

- Israel C. Heaton** Professor of Recreation (1956)
B.S., M.S., Utah State University, 1940, 1941; Re.D., University of Indiana, 1955.
- Wilford Hess** Assistant Professor of Botany (1962)
B.S., Brigham Young University, 1957; M.S., Ph.D., Oregon State University, 1960, 1962.
- Armin J. Hill** Professor of Physics; Dean of the College of Physical and Engineering Sciences (1957)
B.S., M.S., Montana State College, 1932, 1938; M.S., Ph.D., California Institute of Technology, 1949, 1950.
- Max W. Hill** Associate Professor of Physics (1958)
B.A., Brigham Young University, 1954; Ph.D., University of California, 1959.
- Kenneth L. Hillam** Assistant Professor of Mathematics (1957)
B.S., M.S., University of Utah, 1949, 1956; Ph.D., University of Colorado, 1962.
- Lynn M. Hilton** Associate Professor of Education (1953)
B.S., M.S., University of Utah, 1950; Ph.D., University of Chicago, 1952.
- Lehi F. Hintze** Professor of Geology (1953)
B.A., University of Utah, 1941; M.A., Ph.D., Columbia University, 1949, 1951.
- Leona Holbrook** Professor of Physical Education (1937)
B.S., University of Utah, 1929; M.A., Ed.D., Columbia University, 1935, 1950.
- Keith H. Hoopes** Assistant Professor of Animal Husbandry (1957)
B.S., Utah State University, 1957; D.V.M., State College of Washington, 1956.
- A. Burt Horsley** Associate Professor of History of Religion (1956)
B.A., M.A., Brigham Young University, 1945, 1954; DdP., Münster University, 1955; Ph.D., Westphalian Welhelms Universität, Münster, Germany, 1956.
- William A. Hoskisson** Assistant Professor of Bacteriology (1957)
B.S., M.S., Utah State University, 1938, 1941; Ph.D., University of Illinois, 1944.
- Robert J. Howell** Professor of Psychology (1952)
B.A., M.A., Ph.D., University of Utah, 1948, 1949, 1951.
- Deon W. Hubbard** Assistant Professor of Agricultural Economics (1962)
B.S. M.S., Utah State University, 1953, 1954; Ph.D., Oregon State University, 1962.
- Paul V. Hyer** Associate Professor of History (1957)
B.S., Brigham Young University, 1951; M.A., Ph.D., University of California, 1953, 1960.
- Reed M. Izatt** Associate Professor of Chemistry (1956)
B.S., Utah State University, 1951; Ph.D., Pennsylvania State University, 1954.
- Briant S. Jacobs** Professor of English (1946)
B.A., Brigham Young University, 1939; Ph.D., State University of Iowa, 1944.
- M. Wells Jakeman** Professor of Archaeology (1946)
B.A., University of Utah, 1931; M.A., University of Southern California, 1932; Ph.D., University of California, 1938.
- August W. Jaussi** Assistant Professor of Zoology (1962)
B.S., University of Idaho, 1953; M.S., Brigham Young University, 1955; Ph.D., Oklahoma State University, 1960.
- Martha R. Jenny** Associate Professor of Nursing (1952)
Diploma, Presbyterian Hospital School of Nursing, Chicago, 1926; B.S., Teachers College, Columbia University, 1939; M.S., University of Wisconsin, 1946.
- De Lamar Jensen** Associate Professor of History (1957)
B.A., Brigham Young University, 1952; M.A., Ph.D., Columbia University, 1953, 1957.
- Vern H. Jensen** Associate Professor of Educational Psychology (1949)
B.S., M.S., Brigham Young University, 1948, 1950; Ed.D., University of Colorado, 1957.
- Ernest C. Jeppsen** Professor of Industrial Education (1959)
B.S., Utah State University, 1926; M.S., Colorado State University, 1938.

- Eldred A. Johnson** Associate Professor of Accounting (1955)
B.A., M.A., Brigham Young University, 1949, 1950; C.P.A., State of California, 1952.
- Lynn E. Johnson** Assistant Professor of Psychology (1961)
B.S., Brigham Young University, 1958; M.A., Ph.D., University of Utah, 1959, 1961.
- Jens J. Jonsson** Professor of Electrical Engineering (1953)
B.S.G.E., B.S.E.E., University of Utah, 1944, 1946; M.S.E.E., Ph.D., Purdue University, 1947, 1951.
- Edwin R. Kimball** Professor of Physical Education (1935)
B.S., Brigham Young University, 1926; M.S., University of Southern California, 1935; Ed.D., University of Oregon, 1955.
- Elmer M. Knowles** Professor of Human Development and
Family Relationships (1962)
B.S., M.S., Utah State University, 1949, 1950; Ph.D., Cornell University, 1952.
- Mary A. Krider** Associate Professor of Educational Psychology (1954)
B.A., University of Nebraska, 1927; Ed.M., University of Oklahoma, 1940; Ph.D., Wayne State University, 1958.
- Don H. Larsen** Professor of Bacteriology (1952)
B.S., Brigham Young University, 1940; M.A., University of Nebraska, 1942; Ph.D., University of Utah, 1950.
- Clinton F. Larson** Professor of English (1947)
B.A., M.A., University of Utah, 1943, 1947; Ph.D., University of Denver, 1956.
- Gustave O. Larson** Associate Professor of History of Religion (1954)
B.A., M.A., University of Utah, 1920, 1926.
- W. Derby Laws** Professor of Agronomy (1960)
B.S., Brigham Young University, 1939; M.S., Utah State University, 1941; Ph.D., Ohio State University, 1944.
- Harold R. Laycock** Associate Professor of Music (1949)
B.A., M.A., Brigham Young University, 1937, 1947; D.M.A., University of Southern California, 1960.
- Harold W. Lee** Professor of Modern Languages (1937)
B.A., M.A., Brigham Young University, 1938, 1940; Ph.D., Stanford University, 1946.
- Robert L. Layton** Associate Professor of Geography (1954)
B.S., M.S., University of Utah, 1951, 1952; Ph.D., University of Syracuse, 1962.
- Wesley P. Lloyd** Professor of Personnel and Guidance; Dean of
the Graduate School (1935)
B.S., M.S., Brigham Young University, 1927, 1934; Ph.D., University of Chicago, 1937.
- Austin G. Loveless** Professor of Industrial Education (1963)
B.S., Utah State University, 1947; M.S., Oregon State University, 1952; Ed.D., University of Missouri, 1962.
- Daniel H. Ludlow** Professor of Scripture (1955)
B.S., Utah State University, 1946; M.S., Indiana University, 1953; Ed.D., Columbia University, 1955.
- Ross J. McArthur** Professor of Industrial Education (1956)
B.S., M.S., Utah State University, 1949, 1953; Ed.D., University of Missouri, 1955.
- Kent H. McKnight** Professor of Botany (1947)
B.S., M.S., Brigham Young University, 1948, 1952; Ph.D., University of Michigan, 1955.
- Delbert H. McNamara** Professor of Physics (1955)
B.S., Ph.D., University of California at Berkeley, 1947, 1950.
- Walter E. McPhie** Assistant Professor of Education (1959)
B.S., Utah State University, 1952; M.A., University of Utah, 1953; Ed.D., Stanford University, 1959.
- Melvin P. Mabey** Associate Professor of History and Political Science (1955)
B.S., M.A., Brigham Young University, 1947, 1953; D. Phil, Oxford University (England), 1955.

- Garth L. Mangum** Associate Professor of Economics (1960)
B.S., Brigham Young University, 1956; M.P.A., Ph.D., Harvard University, 1958, 1960.
- Conan E. Mathews** Professor of Art; Dean of College of Fine Arts (1956)
B.A., College of Idaho, 1936; M.F.A., University of Utah, 1950.
- J. Keith Melville** Associate Professor of Political Science (1957)
B.A., University of Utah, 1947; M.A., University of California, 1949; Ph.D., University of Utah, 1956.
- Charles L. Metten** Associate Professor of Dramatic Arts (1962)
B.A., M.A., University of California at Los Angeles, 1951, 1952; Ph.D., State University of Iowa, 1960.
- Albert O. Mitchell** Professor of Dramatic Arts (1956)
B.S., M.S., University of Utah, 1933, 1935; Ph.D., University of Wisconsin, 1938.
- J. C. Moffitt** Professor of Educational Administration; Special Consultant
to the Area of Educational Administration (1953)
B.S., M.S., Brigham Young University, 1926, 1929; Ph.D., University of Chicago, 1940.
- Darrel J. Monson** Associate Professor of Electrical Engineering (1956)
B.S., University of Utah, 1943; M.S., University of California at Berkeley, 1952.
- Glen Moore** Associate Professor of Botany (1958)
B.S., M.S., Brigham Young University, 1949, 1950; Ph.D., University of Chicago, 1953.
- Alonzo J. Morley** Professor of Speech (1928)
B.A., M.A., Brigham Young University, 1925, 1931; Ph.D., University of Iowa, 1935.
- A. Reed Morrill** Professor of Educational Administration (1948)
B.S., M.S., Brigham Young University, 1928, 1937; Ed.D., University of Oregon, 1948.
- Lawrence Morris** Professor of Animal Husbandry (1952)
B.S.A., University of Arizona, 1925; M.S., Texas A. & M., 1928; Ph.D., Louisiana State University, 1938.
- Sadie O. Morris** Professor of Food and Nutrition (1957)
B.S., M.S., Utah State University, 1921, 1922; Ph.D., Columbia University, 1933.
- Darrell Moses** Assistant Professor of Educational Psychology (1959)
B.A., M.A., University of Utah, 1952, 1953; Ph.D., University of Southern California, 1960.
- J. Joel Moss** Professor of Human Development and Family
Relationships (1961)
B.S., M.S., Brigham Young University, 1948, 1949; Ph.D., University of North Carolina, 1954.
- J. Richard Murdock** Associate Professor of Botany (1952)
B.S., M.S., Brigham Young University, 1949, 1951; Ph.D., State College of Washington, 1957.
- Joseph R. Murphy** Assistant Professor of Zoology (1960)
B.A., M.A., Brigham Young University, 1950, 1951; Ph.D., University of Nebraska, 1957.
- Glen T. Nelson** Professor of Economics (1954)
B.S., M.S., Utah State University, 1942, 1948; Ph.D., University of Illinois, 1950.
- K. LeRoi Nelson** Professor of Chemistry (1956)
B.S., Utah State University, 1948; Ph.D., Purdue University, 1952.
- H. Mark Nelson** Assistant Professor of Physics (1959)
B.S., M.S., Brigham Young University, 1953, 1954; Ph.D., Harvard University, 1959.
- Hugh W. Nibley** Professor of History of Religion (1946)
B.A., University of California at Los Angeles, 1934; Ph.D., University of California, 1938.
- Henry J. Nicholes** Professor of Health Education (1946)
B.A., Brigham Young University, 1935; M.S., Ph.D., University of Wisconsin, 1939, 1941.
- Joseph K. Nicholes** Professor of Chemistry (1933)
B.A., Brigham Young University, 1916; M.A., Stanford University, 1924.

- Howard C. Nielson** Professor of Economics (1957)
B.S., University of Utah, 1947; M.S., University of Oregon, 1949; M.B.A., Ph.D., Stanford University, 1956, 1957.
- Quentin R. Nordgren** Associate Professor of Music (1955)
B.A., M.A., Brigham Young University, 1942, 1950; Ph.D., Indiana University, 1955.
- Keith R. Oakes** Professor of Educational Administration (1957)
B.S., M.S., Utah State University, 1940, 1948; Ed.D., University of Southern California, 1954.
- Clinton L. Oaks** Professor of Business Management (1957)
B.A., Brigham Young University, 1948; M.B.A., Ph.D., Stanford Graduate School of Business, 1950, 1955.
- John E. Ord** Assistant Professor of Education (1957)
B.S., Utah State University, 1940; M.S., University of Utah, 1949; Ed.D., Stanford University, 1958.
- Bryce B. Orton** Associate Professor of Accounting (1961)
B.S., Brigham Young University, 1951; M.B.A., University of Oregon, 1957; D.B.A., University of Washington, 1961.
- James B. Ott** Assistant Professor of Chemistry (1960)
B.S., M.S., Brigham Young University, 1955, 1956; Ph.D., University of California, 1959.
- Glen F. Ovard** Associate Professor of Educational Administration (1958)
B.S., M.E., Brigham Young University, 1949, 1954; Ed.D., Stanford University, 1958.
- Thayne J. Packer** Associate Professor of Youth Leadership (1959)
B.S., Utah State University, 1939.
- Clyde A. Parker** Associate Professor of Personnel and Guidance (1953)
B.S., M.E., Brigham Young University, 1952; Ph.D., University of Minnesota, 1957.
- Darhl Max Pedersen** Assistant Professor of Psychology (1962)
B.S., M.S., Brigham Young University, 1957, 1958; Ph.D., University of Illinois, 1962.
- Dean A. Peterson** Professor of Business Education and Office Management; Director of the Summer School (1942)
B.S., Brigham Young University, 1938; M.S., Ed.D., University of Southern California, 1942, 1959.
- Evan T. Peterson** Associate Professor of Sociology (1959)
B.S., M.S., Brigham Young University, 1952, 1953; Ph.D., University of Michigan, 1959.
- Hugh W. Peterson** Associate Professor of Chemistry (1927)
B.A., M.A., Brigham Young University, 1916, 1928; Ph.D., State University of Iowa, 1936.
- William R. Phillips** Associate Professor of Geology (1957)
B.S., M.S., Ph.D., University of Utah, 1950, 1951, 1954.
- Richard D. Poll** Professor of History and Political Science (1948)
B.A., M.A., Texas Christian University, 1938, 1939; Ph.D., University of California at Berkeley, 1948.
- Bill J. Pope** Professor of Chemical Engineering (1958)
B.S., University of Utah; M.S., Ph.D., University of Washington, 1948, 1959.
- Blaine R. Porter** Professor of Human Development and Family Relationships (1955)
B.S., M.A., Brigham Young University, 1947, 1949; Ph.D., Cornell University, 1952.
- J. Perry Polson** Associate Professor of Business Education and Office Management (1952)
B.S., M.S., University of Utah, 1947, 1952; Ph.D., University of Southern California, 1961.
- Edwin A. Read** Director of Laboratory Schools; Associate Professor of Education (1959)
B.Ed., M.Ed., University of Alberta, 1948, 1949; Ed.D., University of Oregon, 1956.
- Jesse W. Reeder** Associate Professor of History and Political Science (1952)
B.S., M.S., Utah State University, 1934, 1937; Ph.D., Cornell University, 1952.

- Howard T. Reid** Professor of Personnel and Guidance (1953)
B.A., Brigham Young University, 1940; M.S., Ed.D., University of Southern California, 1947, 1949.
- Russell R. Rich** Professor of History of Religion (1953)
B.S., Utah State University, 1936; M.A., Brigham Young University, 1949; Ed.D., University of Wyoming, 1955.
- Grant S. Richards** Associate Professor of Animal Husbandry (1945)
B.S., M.S., Utah State University, 1940, 1942.
- Chauncey C. Riddle** Professor of Philosophy (1952)
B.S., Brigham Young University, 1947; M.A., Ph.D., Columbia University, 1951, 1958.
- J. Keith Rigby** Professor of Geology (1953)
B.S., M.S., Brigham Young University, 1948, 1949; Ph.D., Columbia University, 1952.
- Burton W. Robinson** Professor of Clinical Psychology (1955)
B.S., M.S., Utah State University, 1951; Ph.D., Purdue University, 1954.
- Donald W. Robinson** Professor of Mathematics (1956)
B.S., M.A., University of Utah, 1948, 1952; Ph.D., Case Institute of Technology, 1956.
- R. Max Rogers** Professor of Modern Languages (1945)
B.A., M.A., Brigham Young University, 1940, 1942; Ph.D., Stanford University, 1951.
- Ralph L. Rollins** Professor of Civil Engineering (1956)
B.S., M.S., Utah State University, 1941, 1949; Ph.D., Iowa State College, 1954.
- Antone K. Romney** Professor of Educational Psychology; Dean of
College of Education (1945)
B.S., M.S., Brigham Young University, 1933, 1934; Ed.D., Stanford University, 1947.
- Richard D. Sagers** Associate Professor of Bacteriology (1958)
B.S., M.S., Brigham Young University, 1954, 1955; Ph.D., University of Illinois, 1958.
- Clyde D. Sandgren** Vice-President and General Counsel; Professor of
Business Law
B.S., Brigham Young University, 1937; LL.B., St. John's University, 1939.
- Lawrence W. Sardoni** Professor of Music (1945)
B.A., M.A., Brigham Young University, 1935, 1946.
- Sterling D. Sessions** Associate Professor of Business
Management (1961)
B.A., Brigham Young University, 1949; M.A., New York University, 1950; DBA, Harvard, 1962.
- Merlin J. Shaw** Assistant Professor of Religious Education (1960)
B.A., M.A., University of Utah, 1938, 1946; Ed.D., University of California at Berkeley, 1960.
- R. Phil Shumway** Professor of Animal Husbandry (1949)
B.S., Utah State University, 1947; M.S., University of Minnesota, 1949; Ph.D., Utah State University, 1959.
- C. Warren Simmonds** Associate Professor of Electrical Engineering (1962)
B.S., University of Utah, 1951; M.S., Massachusetts Institute of Technology, 1954; Ph.D., University of Utah, 1961.
- John M. Simonsen** Professor of Mechanical Engineering (1954)
B.S.M.E., University of Utah, 1950; M.S.M.E., Ph.D., Purdue University, 1952, 1955.
- Karl M. Skousen** Associate Professor of Accounting (1958)
B.S., M.S., Brigham Young University, 1944, 1957; Ph.D., Michigan State University, 1962.
- Kay H. Smith** Assistant Professor of Psychology (1961)
B.A., M.A., Brigham Young University, 1957, 1958; Ph.D., Wayne State University, 1962.
- Oliver R. Smith** Professor of Journalism (1938)
B.A., Brigham Young University, 1938; Ph.D., State University of Iowa, 1951.
- Robert J. Smith** Professor of Accounting (1949)
B.S., Brigham Young University, 1948; M.B.A., Northwestern University, 1949; C.P.A., Illinois, 1949; C.P.A., State of Utah, 1960; D.B.A., Indiana University, 1957.

- Wilford E. Smith** Professor of Sociology (1948)
B.A., University of Utah, 1943; M.A., Brigham Young University, 1948; Ph.D., University of Washington, 1952.
- L. Douglas Smoot** Assistant Professor of Chemical Engineering (1960)
B.S., Brigham Young University, 1957; M.S., Ph.D., University of Washington, 1958.
- Richard L. Snow** Associate Professor of Chemistry (1957)
B.S., Ph.D., University of Utah, 1953, 1957.
- John L. Sorenson** Associate Professor of Anthropology and Sociology (1958)
B.S., M.A., Brigham Young University, 1951, 1952; M.S., California Institute of Technology, 1952; Ph.D., University of California at Los Angeles, 1961.
- Irene Osmond Spears** Professor of English (1936)
B.A., Brigham Young University, 1929; M.A., Ph.D., Stanford University, 1934, 1942.
- Sidney B. Sperry** Professor of Old Testament Languages and Literature (1932)
B.A., University of Utah, 1917; M.A., Ph.D., University of Chicago, 1926, 1931.
- Stephen S. Stanford** Associate Professor of Housing and Home Management (1959)
B.S., M.S., Brigham Young University, 1950, 1951; Ph.D., University of Colorado, 1959.
- Howard S. Stutz** Associate Professor of Botany (1953)
B.S., M.S., Brigham Young University, 1940, 1951; Ph.D., University of California at Berkeley, 1956.
- *Albert D. Swensen** Professor of Chemistry (1947)
B.A., M.A., Brigham Young University, 1937, 1938; Ph.D., Louisiana State University, 1941.
- Russel B. Swensen** Professor of History (1933)
B.A., Brigham Young University, 1926; M.A., Ph.D., University of Chicago, 1931, 1934.
- Joseph N. Symons** Professor of Sociology (1953)
B.S., M.S., Utah State University, 1927, 1932; Ph.D., University of Chicago, 1944.
- Orea B. Tanner** Associate Professor of English (1938)
B.A., Brigham Young University, 1932; M.A., Columbia University, 1953.
- Vasco M. Tanner** Professor of Zoology and Entomology (1925)
B.A., Brigham Young University, 1915; M.A., University of Utah, 1920; Ph.D., Stanford University, 1925.
- Wilmer W. Tanner** Professor of Zoology and Entomology (1949)
B.S., M.A., Brigham Young University, 1936, 1937; Ph.D., University of Kansas, 1949.
- *Charles Taylor** Professor of Psychology (1954)
B.Mus., A.B., Ph.D., Syracuse University, 1940, 1948, 1954.
- H. Darrel Taylor** Professor of Modern Languages (1948)
B.A., M.A., University of Arizona, 1947, 1948; Ph.D., University of Illinois, 1956.
- Harvey L. Taylor** Vice-President; Professor of Educational Administration (1954)
B.S., University of Utah, 1921; M.A., Columbia University, 1925; LL.D., Arizona State College, 1956.
- Weldon J. Taylor** Professor of Marketing; Dean of the College of Business (1937)
B.S., Brigham Young University, 1934; M.B.A., Harvard Graduate School of Business Administration, 1937; Ph.D., Graduate School of Business Administration, New York University, 1955.
- John A. Thomas** Assistant Professor of English (1962)
B.A., M.A., Brigham Young University, 1953, 1954; Ph.D., University of Maryland, 1962.
- Woodruff C. Thomson** Associate Professor of English (1950)
B.A., M.A., Ph.D., University of Utah, 1938, 1949, 1962.

- Dale T. Tingey** Associate Professor of Religious Instruction (1957)
B.A., University of Utah, 1952; M.S., Brigham Young University, 1955; Ph.D., Washington State University, 1957.
- Jack B. Trunnell** Professor of Developmental Biology (1958)
B.A., Brigham Young University, 1942; M.D., University of Utah, 1945.
- Glen H. Turner** Associate Professor of Art (1947)
B.S., M.A., Brigham Young University, 1940, 1948.
- Rodney Turner** Associate Professor of Religious Education (1956)
B.A., M.A., Brigham Young University, 1949, 1953; Ed.D., University of Southern California, 1960.
- L. Elliott Tuttle** Assistant Professor of Geography (1936)
B.S., M.S., Brigham Young University, 1938, 1948.
- S. Lyman Tyler** Professor of History; Director of Libraries (1952)
B.S., Ph.D., University of Utah, 1949, 1951.
- Richard D. Ulrich** Associate Professor of Mechanical Engineering (1960)
B.S., M.S.M.E., Ph.D., Purdue University, 1954, 1955, 1959.
- Lee B. Valentine** Associate Professor of Modern Languages (1938)
B.A., M.A., Brigham Young University, 1939, 1948; Ph.D., Stanford University, 1958.
- Howard B. Vanfleet** Assistant Professor of Physics (1960)
B.S., Brigham Young University, 1955; Ph.D., University of Washington, 1961.
- Glenn M. Vernon** Associate Professor of Sociology (1959)
B.S., M.S., Brigham Young University, 1947, 1950; Ph.D., Washington State University, 1953.
- Rudger H. Walker** Professor of Agronomy; Dean of the College of Biological and Agricultural Sciences (1960)
B.S., Brigham Young University, 1923; M.S., Ph.D., Iowa State University, 1925, 1927.
- Max V. Wallentine** Assistant Professor of Animal Husbandry (1962)
B.S., Utah State University, 1955; M.S., Ph.D., Cornell University, 1956, 1960.
- Ted J. Warner** Assistant Professor of History (1962)
B.S., M.S., Brigham Young University, 1955, 1958; Ph.D., University of New Mexico, 1963.
- Arthur R. Watkins** Professor of Modern Languages (1952)
B.A., M.A., Brigham Young University, 1941, 1942; Ph.D., Stanford University, 1948.
- Ray Watters** Professor of Health and Physical Education (1957)
B.S., M.S., Utah State University, 1948, 1950; Ph.D., Indiana University, 1960.
- Stanley H. Watts** Associate Professor of Physical Education; Head Basketball Coach (1947)
B.S., Brigham Young University, 1938.
- Max D. Weaver** Associate Professor of Art (1959)
B.S., M.A., Utah State University, 1939, 1955.
- Stanley L. Welsh** Associate Professor of Botany (1960)
B.S., M.S., Brigham Young University, 1951, 1957; Ph.D., Iowa State University, 1960.
- Dale T. West** Associate Professor of English (1947)
B.A., Brigham Young University, 1940; M.A., University of Southern California, 1955; Ph.D., University of Colorado, 1962.
- Fred G. White** Assistant Professor of Chemistry (1961)
B.S., M.S., Brigham Young University, 1952, 1956; Ph.D., University of California, 1961.
- Ray T. Wilcox** Assistant Professor of Education (1957)
B.S., M.Ed., Brigham Young University, 1951, 1954; Ed.D., University of California at Berkeley, 1957.
- Ernest J. Wilkins** Professor of Modern Languages (1953)
B.A., Brigham Young University, 1947; M.A., Ph.D., Stanford University, 1949, 1954.

- Ernest L. Wilkinson** President of the University
 B.A., Brigham Young University, 1921; LL.B., George Washington University, 1926;
 S.J.D., Harvard University, 1927; LL.D., Brigham Young University, 1957.
- Warren B. Wilson** Associate Professor of Art and Education (1954)
 B.S., Utah State University, 1943; M.F.A., State University of Iowa, 1949.
- Glena D. Wood** Assistant Professor of English (1952)
 B.A., Brigham Young University, 1936; M.A., Ph.D., University of Kentucky, 1949,
 1958.
- Stephen L. Wood** Associate Professor of Zoology and Entomology (1956)
 B.S., M.S., Utah State University, 1946, 1948; Ph.D., University of Kansas, 1953.
- Golden L. Woolf** Professor of Educational Administration (1934)
 B.A., M.A., Brigham Young University, 1934, 1936; Ed.D., University of California,
 1940.
- David H. Yarn, Jr.** Professor of Philosophy (1950)
 B.A., Brigham Young University, 1946; M.A., Ed.D., Columbia University, 1949,
 1958.
- Paul H. Yearout** Associate Professor of Mathematics (1962)
 B.A., Reed College, 1949; M.S., Ph.D., University of Washington, 1958, 1961.
- Karl E. Young** Professor of English (1930)
 B.A., M.A., Oxford University (England), 1930, 1934.

On authorization by the Graduate Council the service of members of the Graduate Faculty will be supplemented by that of other members of the University faculty whose advanced training and effective academic work in highly specialized fields qualifies them for service in the graduate program.

*On leave.

General Information

History and Purpose

The first graduate offerings of Brigham Young University were established in 1922, forty-seven years after the founding of Brigham Young Academy and within an administrative unit designated as the Graduate Division. The objective of graduate study was then stated in these terms: "The essential aim . . . is to develop the power to do independent work and to encourage the spirit of research. Each candidate is expected to possess a broad general knowledge of his major subject with less detail in the case of his minor subjects."

Institutions of higher learning reflect the aspirations and major achievements of the American people. They carry the ideals, dreams, and hopes of democracy from generation to generation. From their ranks must come men and women trained in the skills, the arts, and the sciences, and dedicated to a high spiritual understanding through which men can work for the common good.

Professional Associations

Brigham Young University Graduate School is a member of the following professional associations:

Council of Graduate Schools in the United States
Western Association of Graduate Schools

Administration and Organization

The Graduate Dean. The dean of the Graduate School as general administrator of the graduate program of the University is responsible, under authorization of the academic vice-president and the President, to execute policy and procedure of the Graduate School. He serves as chairman of the Graduate Council and conducts meetings of the graduate faculty.

The Graduate Council. The chief administrative body for the graduate program is the Graduate Council, which includes the dean of the Graduate School, the director of research, four members of the graduate faculty elected at large for terms of three years and one member of the graduate faculty elected for a three-year term from each of the areas of subject matter included in the undergraduate colleges. The academic vice-president and the director of libraries are ex officio members of the council. The Graduate Council is empowered to act for the graduate faculty on all student petitions and on departmental requests for approval of faculty members for graduate instruction and supervision; it also initiates policy proposals regarding the graduate program.

The Graduate Faculty. It is the responsibility of the graduate faculty to formulate and recommend requirements for all types of graduate degrees and to recommend regulations and facilities to promote the scholarly activities and research interests of graduate students.

Graduate Degrees

The Graduate School offers programs leading to graduate degrees in areas designated by the terms "pure knowledge" and "applied knowledge." Degrees awarded in the pure knowledge area include Master of Arts, Master of Science, and Doctor of Philosophy. In these disciplines, the program emphasizes primarily a scholarly approach to theoretical and creative subject matter leading to the extension of human knowledge. Within these areas of study a thesis is among the requirements for the master's degree. This requirement can be waived only

under most exceptional circumstances. An acceptable dissertation and foreign language proficiency are among the requirements for the Ph.D. degree.

Degrees in applied knowledge emphasize principally the utilization of man's intellectual and cultural heritage for the benefit of mankind. Attention is given primarily to the pursuit of knowledge for its application in professional work with appropriate scholastic study and research toward this end. Included in this discipline are such degrees as Master of Business Administration, Master of Education, Master of Religious Education, and Doctor of Education. With the approval of the Graduate Council and the University administration, each department chooses its respective program leading to the various degrees. Each department shall designate whether or not the master's degree program will require foreign language proficiency.

The Graduate School offers the master's degree in 72 fields distributed through 40 graduate departments, and the doctor's degree in 26 fields distributed through 13 graduate departments. A department may be responsible for the operation of the graduate program in several fields. On the other hand, one field may include the offerings of several departments. The departments fall within the areas of biological and agricultural sciences; business; education; family living; fine arts; humanities and social sciences; physical and engineering sciences; physical education; religious instruction; and industrial education.

Graduate degrees are offered in the following departments and fields:

Doctor of Philosophy

- Bacteriology
- Botany
- Chemistry
 - Analytical-Physical Chemistry
 - Biochemistry
 - Inorganic Chemistry
 - Organic Chemistry
 - Physical Chemistry
- Family Life Education
 - Child Development
 - Family Relationships
 - Marriage Counseling
- Geology
 - Economic Geology and Mineralogy
 - Stratigraphy, Sedimentation, and Paleontology
 - Structural, Field, and Dynamic Geology
- Graduate Department of Education
 - Educational Psychology
- Graduate Studies in Religious Instruction
 - Bible and Modern Scripture
 - History of Religion
- History
- Music
- Physics
- Psychology
 - Clinical Psychology
 - General Psychology
- Sociology and Anthropology
- Zoology and Entomology

Doctor of Education

- Graduate Department of Education
 - Educational Administration
 - Educational Personnel and Guidance
 - Educational Psychology

Doctor of Religious Education

Graduate Studies in Religious Instruction
Religious Education

Master of Arts and Master of Science

Agronomy
Animal Husbandry
Archaeology
Art
 Painting and Sculpture
 Design and Crafts
Bacteriology
Botany
Business Education and Office Management
Chemical Engineering Science
Chemistry
 Analytical-Physical Chemistry
 Biochemistry
 Inorganic Chemistry
 Organic Chemistry
 Physical Chemistry
Civil Engineering Science
Dramatic Arts
 Interpretation
 Radio and Television
 Theatre and Dramatic Arts
Economics
Electrical Engineering Science
English
 American Literature
 English Literature
Family Life Education
 Child Development
 Family Relationships
 Homemaking Education
Foods and Nutrition
Geography
Geology
 Economic Geology and Mineralogy
 Stratigraphy, Sedimentation, and Paleontology
 Structural, Field, and Dynamic Geology
Graduate Department of Education
 Educational Administration
 Educational Psychology
 Elementary Education
 Personnel and Guidance
 Secondary Education
 School Psychology (interdepartmental)
 Special Education
Graduate Studies in Religious Instruction
 Bible and Modern Scripture
 History of Religion
Health
History
Industrial Education
Institute of Government Service
 State and Local Government

National Government
International Affairs

Journalism

Languages

French

German

Latin

Portuguese

Spanish

Mathematics

Mechanical Engineering Science

Music

Music Education

Music Theory

Musicology

Physical Education

Physics

Political Science

Psychology

General Psychology

School Psychology (interdepartmental)

Recreation

Semitic Languages

Sociology and Anthropology

Speech

Public Address

Speech Pathology and Audiology

Zoology

Natural History

Entomology

Morphology and Experimental Zoology

Master of Accountancy

Accounting

Master of Business Administration

Business Management

Master of Education

Graduate Department of Education

Educational Administration

Educational Psychology

Elementary Education

Personnel and Guidance

School Psychology

Secondary Education

Special Education

Master of Religious Education

Graduate Studies in Religious Instruction

Religious Education

Minors are offered in the fields listed above in addition to the following fields:

Agricultural Economics

Applied Music

Basic Chemistry

Business Management

Educational Philosophy and Programs
Finance and Banking
Industrial Management
Library Science
Marketing
Statistics

General Requirements

ADMISSION TO THE GRADUATE SCHOOL

At Brigham Young University, all students who have the bachelor's degree from an accredited university register with the Graduate School, except in the case of a student who is seeking a second bachelor's degree.

Requirements for Admission on a Degree-Seeking Basis. For admission as a degree-seeking graduate student an applicant must present a 3.0 (B) cumulative average during his latest two years of academic work or during a later period approved by the department and the dean of the Graduate School. The applicant may be required to furnish additional evidence concerning his ability to pursue graduate work in his major field, such as capacity for research or creativity, facility in written and oral expression, appropriate professional objectives, or through qualifying examinations. Remedial work or other requirements may be prescribed.

A student whose native language is not English is cautioned that adequate command of the English language is indispensable to successful graduate work. He must include with his application for admission a statement from a responsible official that the applicant knows how to read, write, speak, and understand the English language sufficiently well to be able to pursue a satisfactory program of study in the Graduate School. Admission ordinarily will be granted on a provisional basis pending the applicant's experience on the campus that demonstrates his ability to do successful graduate work.

Procedure for Admission on a Degree-Seeking Basis. To be admitted to the Graduate School on a degree-seeking basis, a student should file with the Admissions Office of the University an application which includes the following: (1) A form for admission or readmission to the University (unless the student was in attendance the preceding term). (2) Two transcripts of all college or university work other than that completed at Brigham Young University. In addition to the items submitted to the Admissions Office, the applicant should submit to the dean of the Graduate School a form for admission to the Graduate School on a degree-seeking basis and three letters of recommendation. Two of these letters should relate to the student's academic ability and the third to his character. These letters should be sent directly to the Graduate Dean by those making the recommendations. Forms for application and for letters of recommendation are provided by the Office of the Graduate Dean.

Application forms should be filed at least two months before the beginning of the semester in which the student plans to begin his work. Students who do not have their applications filed by this date cannot be assured that their applications will be acted upon by registration time.

The forms are evaluated by the department in which the student intends to major and by the dean of the Graduate School. Permission to register as an "unclassified" graduate student is initiated by the Admissions Office of the University and **does not**, by itself, admit the student to a degree-seeking status. Permission to seek a higher degree is by notice signed by the chairman of the department and the dean of the Graduate School. Notice of acceptance as a degree-seeking student is sent to the applicant from the Office of the Graduate Dean.

Provisional Degree-Seeking Students. The student whose latest two years of academic record is between 2.5 and 3.0 (B) or who matriculated from a university which is not accredited, may be admitted on a provisional classification

upon the recommendation of his department chairman and the approval of the Graduate Dean. (1) A student classified as provisional, due to grade point, shall be required to submit a minimum of 12 semester hours of graduate or approved upper-division credit with a "B" average before being reconsidered for full degree-seeking status. Graduate or approved upper-division credit in an amount of 16 hours received while on provisional status may, if acceptable to the department, be counted toward a graduate degree. (2) For special and significant reason an advisory committee may recommend that graduate or approved upper-division credit beyond 16 hours and not in excess of 21 hours earned during provisional status be granted toward the degree. Final action on such a request will be the responsibility of the Graduate Dean.

Admission on a Non-Degree Basis. A student with the bachelor's degree may register on a non-degree basis for a wide variety of courses for which he is prepared. To be admitted to the Graduate School on a non-degree basis, a student should file with the Admissions Office of the University (unless he was in attendance the preceding term), an application for admission or readmission, furnish an official transcript of all college or university work other than that completed at Brigham Young University, show evidence of having received the bachelor's degree, and present an academic record of 2.0 or higher. Admission is by means of a registration permit issued by the Admissions Office of the University. If a student has been in attendance at Brigham Young University the previous term, registration materials are automatically prepared for him.

Master's Degree

The Graduate School offers the following master's degrees: Master of Arts, Master of Science, Master of Accountancy, Master of Business Administration, Master of Education, and Master of Religious Education. The master's degree is awarded upon completion of general and departmental requirements. For specific requirements, see the departmental listings.

Admission on a graduate degree-seeking basis must be completed before the student registers for the last 15 hours of credit intended to apply on the degree.

PROCEDURE FOR THE GRADUATE DEGREE-SEEKING STUDENT

Following admission to the Graduate School on a degree-seeking basis, the student should secure from the Office of the Graduate Dean, forms covering the following headings, and should return them to the same office within the time limit indicated:

Advisory Committee. The advisory committee must be formed and the names of the members on file in the Office of the Graduate Dean within two months after a student's first registration on a degree-seeking basis.

The student's program and his thesis are developed under the direction and supervision of the advisory committee. The committee for the master's degree consists of at least two members, one member representing the major field and one the minor or supporting field. These members are nominated by the student from the graduate faculty of his major and minor or supporting fields, in consultation with the chairman of his major department and with the approval of the dean of the Graduate School. The chairman of the advisory committee is a representative of the major field. This committee advises the student in his proposed program, approves his registration, and directs his research and the work on his thesis. At least 15 hours must be taken after the advisory committee has been formed and must be approved by the advisory committee prior to registration. All work which is to apply toward an advanced degree must be approved by the advisory committee.

An advisory committee may be changed with the approval of all prospective members of the newly constituted committee, the chairman of the major department, and the dean of the Graduate School. After such a change, the student reviews his entire program with the new committee.

English 99. The English 99 form is due during the first semester of graduate

work. Students who lack ability to write clearly and correctly (as determined by the chairman of the student's major department), are required to enroll in English 99, Problems in Thesis Writing, a non-credit course. Students should take this course at the earliest possible time.

Course Outline. This constitutes the official program of the graduate student and is due in the Office of the Graduate Dean 30 days after the first registration as a degree-seeking student.

Revisions. When there is a needed change in the student's program, advisory committee membership, etc., a memo should be submitted to the Office of the Graduate Dean, recommending the revision and signed by all members of the advisory committee.

Title Card and Prospectus of the Master's Thesis. Before beginning his research or creative work, the student must obtain approval of the thesis problem from his advisory committee, and he must file with the Office of the Graduate Dean a title card and a prospectus, both signed by the members of the advisory committee. He is required to complete at least one semester of study after this is done.

Application for Graduation. A student, when contemplating graduation, should secure from the Office of the Graduate Dean an application for graduation form and pay the graduation fee of \$20 at the Treasurer's Office. This should be not later than January 15 for June graduates and March 15 for August graduates, and before filing the thesis with the Office of the Graduate Dean or scheduling the final examination. A \$3 late fee will be charged if paid after the above dates.

FILING OF THESIS

An academic department may, on special authorization of the Graduate Council, choose as a policy, provision No. 2 as indicated below. In departments where such approval has been granted, the candidate may choose either of the two following provisions for filing the thesis.

(1) A complete, signed but unbound copy of the thesis in final form, and one extra original copy of an approved abstract (two extra originals if the student is majoring or minoring in education) not exceeding in length 60 lines of 60 spaces each, must be filed with the Office of the Graduate Dean at least fifteen days prior to the final examination and not later than thirty days before graduation.

(2) An approved copy of the thesis in good form, but not in final form, together with an approved copy of the abstract, not exceeding in length, 60 lines of 60 spaces each must be filed with the Office of the Graduate Dean not later than 45 days prior to graduation and fifteen days prior to the final examination.

If provision 2 is chosen, a complete, signed, but unbound copy of the thesis in final form and one extra original copy of an approved abstract (two extra original copies if the student is majoring or minoring in education) must be filed with the Office of the Graduate Dean at least 15 days prior to graduation.

The University requires a minimum of four copies of the thesis and five copies of the abstract. In assembling the material for binding, the abstract should follow the thesis and bibliography.

Detailed directions for the form of the thesis may be obtained from the major department. A department may authorize a maximum of six hours of thesis credit.

Time Limit. Graduate credits are applicable toward the master's degree only within a six-year period from the time they are received. Students are counseled to complete their programs without notable interruption.

AMOUNT AND DISTRIBUTION OF CREDIT

The master's degree requires a minimum of 30 semester hours of credit and may be obtained by completing one of the options listed below. The second

option is available only after the Graduate Council has approved a program which a department has submitted to it.

Applicable to Options I and II is the provision that at least 21 credit hours must consist of courses for which there is a systematic body of subject matter. Each of such courses is to be identified with a given course number such as ordinarily identifies a formal course or seminar. Individual reading, thesis, research, and special problems may not be included in these latter totals.

Option I. At least 15 semester hours, exclusive of thesis, must be in the major field and at least 9 semester hours in a minor field approved by the major department.

Option II. Thirty hours must be in the major field or in direct support of the major field. Courses outside the major field and considered as in direct support of the major field must be specified. Such courses should not constitute more than 12 of the 30 credit hours. A department will be permitted to adopt Option II on request of the department and approval of the Graduate Council. The department need not list courses which are considered to be in direct support of the major field, but when Option II is used, the student's committee should consist of a representative from the major field and one from a supporting area.

A graduate student may have applied toward requirements for the master's degree a limited amount of credit earned by taking certain upper division undergraduate courses which have been approved by the graduate advisory committee, starred at the time of registration, and appear on the course outline of a degree-seeking student. This outline should be completed during the first semester in which the student is granted degree-seeking status. No such work carrying a "C" grade will be applied toward the master's degree. At least 20 hours of the credit for the master's degree must be in the 500 series or above and taken on the Brigham Young University campus in Provo.

Neither lower division nor correspondence credit can be applied toward a graduate degree.

Graduate Credit For Seniors. If, during the last semester of the senior year, a candidate for a baccalaureate degree finds it possible to complete all requirements for such a degree with a registration of fewer than sixteen hours of undergraduate credit, he may register for graduate credit to the extent that the total registration shall not exceed sixteen hours during the semester. A form provided by the Office of the Graduate Dean stating that all baccalaureate requirements are being met during the current semester, must be signed by the appropriate undergraduate dean and presented to the dean of the Graduate School prior to such registration. This registration does not constitute permission to seek a higher degree.

Transfer Credit. Graduate credit acceptable to a student's advisory committee and not in excess of 10 semester hours may be transferred from another accredited university upon the approval of the student's advisory committee and the Graduate Council. Forms for petitioning for such transfers are available in the Office of the Graduate Dean. Credit transferred must represent work which is a fair and reasonable equivalent of corresponding work at this University. All transferred credit must be of grade "B" or better. At least twenty semester hours toward the master's degree must be taken on the Brigham Young University campus in Provo.

STUDENT LOAD

An academic load for graduate students not part-time employed is from 10 to 16 semester hours or their equivalent in research. Teaching assistants and others employed part time should limit their loads to fewer than 14 credit hours and not less than 6 hours as approved by the registration adviser and the dean of the Graduate School. Full-time employees should register for not more than 5 semester hours. Experience has shown that because of the intensive character of graduate work and the academic grade-point average required, students should usually take less than the maximum load permitted.

SCHOLASTIC STANDARDS

The degree-seeking student who fails to maintain at least a 2.7 grade-point average in his graduate work each semester will be placed on probation and must earn a "B" (3.0) average in graduate level work the next semester or he will cease to be classified on a degree-seeking basis. The average grade of all graduate work attempted must be at least "B." At least three-fourths of all work applying on the degree must be of grade "B" or better; none of the remainder may be of a grade lower than "C." A student with a cumulative grade-point average under 2.0, is not eligible for registration in the Graduate School under any classification.

GRADUATION

All graduating students must attend the graduation exercises unless they have made satisfactory explanations of absence and have been officially excused under the authority of the President of the University. The request to be excused from the commencement exercises must be presented in writing to Vice-President Harvey L. Taylor, at least two weeks prior to commencement. Extreme emergencies of either illness or death in the family are the only exceptions to this requirement. Students not officially excused from the commencement will not be graduated until they attend a later commencement.

FINAL ORAL EXAMINATION

The candidate for graduation must pass a final oral examination not less than 15 days prior to graduation if provision No. 1 is chosen, and not less than 30 days prior to graduation if provision No. 2 is chosen.

It is the duty of the student, after submitting final copies of his thesis to the Office of the Graduate Dean, to schedule the final examination, after obtaining from the chairman of the major department the names of the examining committee. Forms are available for this purpose at the Office of the Graduate Dean.

The examination committee for the master's degree will consist normally of at least four members. There must be at least two examiners from the student's major field and one examiner from the student's minor or supporting field. There shall be on the committee at least two examiners who are not members of the student's thesis advisory committee. The committee may consist of a minimum of three examiners if constituted as provided above. In any case, two or more negative votes will constitute failure in the examination. Other members of the graduate faculty may attend the examination and enter the discussion, but they may not vote.

The final oral examination consists of a student's defense of his thesis and a searching examination into the student's preparation and competence in his major and minor or supporting fields.

Sixth-Year Certificate in Educational Administration

The sixth-year certificate in educational administration is offered for the preparation of school principals and supervisors, and is awarded after completion of requirements listed under the Graduate Department of Education.

Doctor's Degrees

The Graduate School offers the following doctor's degrees: Doctor of Philosophy, Doctor of Education, and Doctor of Religious Education. The doctor's degree is awarded upon completion of general and departmental requirements. For specific requirements, see the departmental listings.

Doctor of Education Degree

ADMISSION REQUIREMENTS

For admission to degree-seeking status as a doctoral applicant, the student must have completed 22 semester hours of education or possess certification as a

teacher, must have completed two years of successful professional experience, and must possess demonstrable acquaintance with the field of education. The student will be tested for familiarity with background factors of significance to education.

CLASSIFICATION OF DOCTORAL STUDENTS

Students seeking the Doctor of Education degree are classified as **doctoral applicants** and **doctoral candidates**. The student must be admitted to degree-seeking status as a **doctoral applicant** at Brigham Young University during the first semester he is enrolled as a full-time graduate student. He is **admitted to candidacy** after meeting conditions for admission to candidacy and before registering for the field project and internship.

ADVISORY COMMITTEE

The early advisement of the student, until he passes the entrance examination, is supervised by the graduate committee in education which assigns him a specific adviser in his major field.

When the student successfully passes the entrance requirements, he is notified to consult with his department chairman to arrange for his advisory committee. The chairman and one member of the advisory committee must be in the student's major field, and there must be at least two additional members representing two other fields. The chairman of the major department is a member *ex officio*. All work which is to apply toward the Doctor of Education degree must be approved by the advisory committee.

As soon as his program of study is determined in consultation with the advisory committee, the student should supply each member of the committee with a copy of the program. He should file one copy, signed by the committee members, with the Office of the Graduate Dean and one copy with the graduate office of the College of Education.

The membership of the advisory committee may be changed with the approval of the graduate committee in education, and the dean of the Graduate School.

ACADEMIC REQUIREMENTS

The Ed.D. degree is awarded for distinguished attainment in a recognized field of learning. The student must meet the planned program as established by his major department. The equivalent of a minimum of three years of full-time study beyond the bachelor's degree is required. Full-time study is defined as ten to sixteen hours in course work or the equivalent in research per semester. The advisory committee has authority to decide what work will be accepted to meet these requirements, and may accept or require up to two years of full-time study elsewhere. One year must consist of two consecutive semesters on the campus of the University, during which the student takes one two-hour seminar each semester. There is no foreign language requirement. The student must demonstrate proficiency in statistics to the satisfaction of the advisory committee.

EXAMINATIONS

A comprehensive examination is administered to all doctoral students after approximately sixty semester hours have been completed. A final written examination is administered to all doctoral students at the completion of their course work.

ADMISSION TO CANDIDACY

Satisfactory completion of the final written examination is necessary for admission to candidacy for the Doctor of Education degree. The student has the responsibility of filing with the dean of the Graduate School a form, provided by the Office of the Graduate Dean and signed by the student's advisory committee and the chairman of his major department, stating that all conditions for admission to candidacy have been met.

Notice from the dean of the Graduate School then admits the student to candidacy for the degree. This normally will be done after the completion of his graduate courses.

FIELD PROJECT AND REPORT

A research project for the improvement of an education program must be carried out under the direction of the student's advisory committee, after he has passed the final written examination. The report of the field study must meet the same standards of format as the Doctor of Philosophy dissertation and must be submitted under the same schedule and requirements regarding publication.

FINAL ORAL EXAMINATION

Not later than 15 days before graduation, the student must pass a final examination on the field project. The examining committee consists of the student's advisory committee and such others as the department chairman and dean of the Graduate School may designate.

TIME LIMIT

All academic work applying toward the Doctor of Education degree must be completed within a period not to exceed nine years.

Doctor of Philosophy Degree

CLASSIFICATION OF DOCTORAL STUDENTS

Students admitted to the Doctor of Philosophy degree program are classified as **doctoral applicants** and **doctoral candidates**. The student must be admitted to degree-seeking status as a **doctoral applicant** at Brigham Young University not later than the beginning of his last three semesters of full-time study intended to apply on the degree. The student is **admitted to candidacy** after meeting conditions for admission to candidacy and before registering for the last two semesters of full-time study intended to apply on the degree.

ADVISORY COMMITTEE

The student's program and his dissertation are developed under the direction and supervision of an advisory committee. The advisory committee for a student working for the Doctor of Philosophy degree consists of at least three members. These members are nominated by the student from the graduate faculty of his major and minor or supporting fields, in consultation with the chairman of his major department and with the approval of the dean of the Graduate School. The chairman of the advisory committee is a representative of the major field. All work which is to apply toward the Doctor of Philosophy degree must be approved by the advisory committee.

As soon as his program of study is determined in consultation with the advisory committee, the student should supply each member of the committee with a copy of the program, and he should file with the Office of the Graduate Dean, a properly signed copy.

The membership of the advisory committee may be changed with the approval of all prospective members of the newly constituted committee, the chairman of the major department, and the dean of the Graduate School. After such a change the student reviews his entire program with the new committee.

ACADEMIC REQUIREMENTS

The Doctor of Philosophy degree is awarded for distinguished attainment in a recognized field of learning, not merely for the completion of courses of study. The student must select a major field of study and at least one minor or supporting field approved by the department chairman and the dean of the Graduate School. A specified minimum amount of full-time study in each minor field is required beyond the bachelor's degree. A full semester of residence credit is defined as from twelve to sixteen hours in course work or the equivalent in research per semester. The advisory committee has authority to decide what work will be accepted to meet these requirements, and may accept or require up to two years of full-time study elsewhere. Ordinarily two years of full-time course work or research is to be taken on the Brigham Young University campus in Provo. At least two consecutive semesters of work or the equivalent of 24 or more semester hours must be taken on the Provo campus. For special reason and on recom-

mentation of the student's advisory committee and by final authorization of the Graduate Council, the minimum time in residence on the Provo campus may be reduced to two full semesters during which 24 or more credit hours will be earned.

LANGUAGE REQUIREMENT

Before completing his comprehensive examinations and being admitted to candidacy, the student must present satisfactory evidence of proficiency in two foreign languages, one of which must be French or German. The selection of both required languages will be made in consultation with the student's advisory committee. In exceptional cases, the student may petition the Graduate Council to substitute Russian for French or German. Minimum oral facility must be demonstrated in one language to be used in fulfilling the requirements for the Doctor of Philosophy Degree.

LANGUAGE EXAMINATION

Language examinations for the Ph.D. degree and for other graduate degrees if required will be administered and evaluated by the language faculty of the University. The examination will be given only during the last full week of October, February, April, and July according to the following schedule: Monday, French; Tuesday, German; Wednesday, Spanish; Thursday, Russian; Friday, all other languages. The student must file an application to take a language examination with the Office of the Graduate Dean at least two weeks prior to the date of the examination.

The language examination will consist of the translation of 600 words which represent passages taken from materials selected by the student's major department. The student will be limited to three hours' time and may use a dictionary. The translation must be rendered into acceptable written English with the meaning of the passage in the original language coming through the translation unimpaired. Minimum oral facility, if required, is limited to the ability to carry on a simple conversation with acceptable pronunciation.

An examination for a given language may be taken the first time without the payment of any fee or special permission. Approval for the second trial must be the written permission of the chairman of the academic department and payment of a \$10 fee. Subsequent attempts must satisfy the same requirements as the second examination and in addition require the written permission of the Graduate Dean.

COMPREHENSIVE EXAMINATION

The student must pass a comprehensive examination on his doctoral fields under the direction of his major department. This examination will normally be given at the end of the second year of graduate study.

ADMISSION TO CANDIDACY

Satisfactory completion of the comprehensive examination and the language requirement is necessary for admission to candidacy for the Doctor of Philosophy degree. The student has the responsibility of filing with the Office of the Graduate Dean a form, provided by the same office and signed by his advisory committee and the chairman of his major department, stating that all conditions for admission to candidacy have been met and that his dissertation subject has been approved.

Notice by the dean of the Graduate School then admits the student to candidacy for the degree. This will normally be done following the completion of two years of graduate work.

DISSERTATION

After being admitted to candidacy, the student under the direction of his advisory committee, pursues original research toward an acceptable dissertation.

An academic department may, on special authorization of the Graduate Council, choose as a program provision No. 2 as indicated below. In departments where such approval has been granted, the candidate may choose either of the two following provisions for filing the dissertation.

(1) A complete, signed, but unbound copy of the dissertation in final form, and one extra original copy of an approved abstract (two extra original copies if the student is majoring or minoring in education) not exceeding in length 60 lines of 60 spaces each, must be filed with the Office of the Graduate Dean at least fifteen days prior to the final examination and not later than thirty days before graduation.

(2) An approved copy of the dissertation in good form, but not in final form, together with one extra original copy of an approved abstract (two extra original copies if the student is majoring or minoring in education) not exceeding in length 60 lines of 60 spaces each, must be filed with the Office of the Graduate Dean not later than 45 days prior to graduation and fifteen days prior to the final examination.

If provision No. 2 is chosen, a complete, signed, but unbound copy of the dissertation in **final form** and one extra original copy of an approved abstract (two extra original copies if the student is majoring or minoring in education) must be filed with the Office of the Graduate Dean at least 15 days before graduation.

A minimum of four copies of the dissertation and five copies of the abstract is required by the University. The student is also required to arrange for the microfilming of his dissertation.

After the dissertation has been accepted by the Office of the Graduate Dean, the student will deliver 4 or more copies to Room 112 Library and pay the \$25 fee for publishing the dissertation through University Microfilm Incorporated. The library will also collect \$2.75 for each copy of the dissertation to be bound or a minimum of \$11. The student will secure further instructions regarding binding, microfilming, and publications of dissertations in Room 112 Library.

FINAL EXAMINATION

Not later than fifteen days before graduation, the student must pass a final examination on his dissertation and applicable subject matter given by a committee of not fewer than five members. The committee consists of the advisory committee, plus such other members as the department chairman and the dean of the Graduate School may designate.

TIME LIMIT

All academic credit applying toward the Doctor of Philosophy degree must be completed within nine years.

Scholarships, Fellowships, and Assistantships

Graduate awards are administered through the committee on graduate awards under the chairmanship of the dean of the Graduate School.

Brigham Young University Fellowships and Scholarships. The University has established the following fellowship and scholarship program for graduate students:

25 scholarships for the payment of tuition and standard fees

50 fellowships ranging in value from \$500 to \$2,000 plus tuition and standard fees

Scholarships and fellowships are awarded on the basis of high academic achievement and are available to students in all areas of graduate study. Recipients must possess a baccalaureate degree at the beginning of the period for which the scholarship or fellowship is granted and must be candidates for a higher degree. Assistantships may be held concurrently with scholarships or fellowships. Applications for the academic year beginning in September should be filed by the preceding March 15.

National Defense Education Act. The University participates in both Title IV and Title VI of the National Defense Education Act. The Modern Foreign Language Program (Title VI) usually is opened in late November and has a dead-

line date of mid-January. Announcements concerning the Title IV 3-year awards are usually released in late December with a deadline date of mid-February.

National Science Foundation. The University cooperates with the National Science Foundation, and fellowships under this program are available in several fields.

Application. Information regarding scholarships and fellowships may be obtained from the Graduate Scholarship and Awards Office located in the Abraham O. Smoot Administration and General Services Building.

Teaching and Laboratory Assistantships. Many departments employ graduate students as teaching or laboratory assistants. Assistantships are awarded on the basis of scholastic accomplishment and competence to serve in a specific department. Remuneration, based on the amount of time devoted to assigned duties, varies from \$850 to \$2,000 per academic year. For application forms and information regarding teaching assistantships, the graduate student should write directly to the chairman of his specific academic department in the University.

Research Assistantships. A substantial number of research assistantships and research fellowships are available at Brigham Young University. Recipients work part-time on research projects under the supervision of a faculty member. Funds are provided by the University, the government, or private sources. Remuneration for assistantships varies from \$1,600 to \$2,800 per calendar year. For application forms and information regarding research assistantships, the student should write directly to the chairman of his specific academic department in the University.

Student Loans and Financial Aids

Limited funds are available to help students remain in school when financial emergencies have arisen and personal or family resources are not available.

Short-term Loans. Short-term loans are available for emergency assistance for tuition, books, fees, and other school expenses to full-time day students. These loans are made in small amounts for immediate requirements. Repayment usually is required within the current semester.

Church Student Loan Fund. The Church of Jesus Christ of Latter-day Saints makes aid available through a long-term loan program by which loans may be made to worthy full-time L.D.S. students who are in critical financial need for tuition, books, fees, and other school expenses. Loans may be made each year in amounts not in excess of \$500 for graduate students. The maximum cumulative loan to any student cannot exceed \$2,100. The student may be permitted to delay making repayment until after he discontinues his full-time status at B.Y.U.

Application. Information regarding financial aids and application forms is available in the Financial Aids Office.

Summer Session

Graduate students doing part of their work at the University during the summer will find a wide range of graduate courses suited to their purpose. Summer School is divided into two terms. Students may register for a maximum of six credit hours per term.

Library Facilities

The Brigham Young University library is presently expanding its research collections on a major scale. With the completion of the J. Reuben Clark, Jr. Library Building in 1961 it was possible to bring together parts of the collection that had been temporarily housed in almost every major building on the campus.

The general collection is available on open shelves on four of the five floor levels: two below and two above the ground floor. The central reference collection, the public catalog, the circulation desk, and the administrative offices are located on the ground level. An information booklet is available to assist students in the use of these new facilities. Study space is available on each floor interspersed with stack areas. Special study facilities are provided for the use of graduate students and other mature scholars.

With the growth of the collection an effort is being made to acquire those library tools necessary to a graduate research program. A well-trained staff is available to assist scholars in the use of the book collection and to interpret the specialized bibliographies, catalogs, guides, and indexes.

The University Library contains over 400,000 bound volumes, several thousand pamphlets, and an extensive collection of titles on microfilm and microcards. A good selection of professional journals and of other current periodicals, as well as local, regional, and national newspapers, is also available.

The facilities of the L.D.S. Genealogical and Historical Library in Salt Lake City, which contains over 500,000 titles, are also available by special arrangement, as are collections of Utah and Mormon materials in the L.D.S. Church Historian's Library in the same city.

Evening School

On week-day evenings classes are conducted on campus in areas of interest to adults who desire to improve or enrich their lives through part-time education.

Regular university credit, equivalent to daytime classes, is given for all Evening School classes. Anyone wishing to do so may take a class on a non-credit basis as an auditor.

Class schedules, listing classes and giving detailed information about all procedures, are available free of charge upon request. Courses listed in the Evening School schedule which do not receive ten or more registrations will be cancelled. Students who have registered in cancelled classes are notified and invited to join other classes or are given full refunds.

Veterans are eligible to enroll under the G.I. Bill if they meet the eligibility requirements of the Veterans' Administration.

Day students may enroll in Evening School classes on their regular registration card by picking up cards marked "Section 90." An extra fee of \$3 per credit hour is charged for these classes.

One dollar is charged for each change slip presented after the first week of the semester unless the action is initiated by the Evening School.

Each student registered through Extension Services who discontinues attendance at class must use the proper procedure to withdraw by coming to the Extension Center.

A prorated refund of tuition fees is made to those who withdraw properly from evening classes during the first four weeks of the semester. There is no refund for withdrawals occurring after the fourth week of the semester.

Students registering for evening classes only register from 5:00 to 9:00 p.m. on the dates announced in current schedules.

University Fees

Although the following figures are applicable at the time of the printing of this catalog, the University must reserve the right to change them without notice.

General Fees

REGULAR STUDENTS:

	1st Semester	2nd Semester	Total
Tuition	\$ 97	\$ 97	\$194
Building, gymnasium, student activity, and health fees	43	43	86
	<u>\$140</u>	<u>\$140</u>	<u>\$280</u>

SPECIAL STUDENTS:

	Tuition	General Service*	Total
Minimum fee	\$22.50	\$ 4.50	\$27.00
Three credit hours	31.00	6.00	37.00
Four credit hours	39.50	7.50	47.00
Five credit hours	48.00	9.00	57.00
Six credit hours	56.50	10.50	67.00
Seven credit hours	65.00	12.00	77.00
Eight credit hours	73.50	13.50	87.00
Nine credit hours	82.00	15.00	97.00

*The general service fee does not include health service or student activity privileges.

The charge for auditing courses is the same as taking them for credit.

All graduate students who continue to use University services or facilities (including consultation with a major professor) will pay a special service fee of \$20 per semester or \$10 for each term of Summer Session.

PAYMENT OF FEES

All students registering are expected to pay full tuition and fees prior to or at the time of registration.

Included in the payment of tuition is a \$10 deposit which is not refundable, even in the event that the student does not complete registration or attend school. For special students (those who do not carry ten or more hours) the nonrefundable deposit is \$5.

LATE REGISTRATION FEE

Late registration fees are assessed all regular and special students for failure to complete registration on scheduled dates. (No exception is made regardless of the reason for being late.)

Failure to complete registration on scheduled dates.

1. First five regular school days following the scheduled
registration date \$ 5.00
2. After the fifth day following scheduled registration date 10.00

Late fees for special students are assessed as 50 per cent of the rate for regular students.

MISCELLANEOUS GENERAL FEES AND FINES

Graduation fee, master's or doctor's degree (Only 50% refunded if degree is not obtained.)	\$20.00
Late application for graduation fee (for those who apply after January 15 for June commencement and after March 15 for August commencement)	3.00
Identification photo50
Change of registration fee, for each change slip presented after the first week of each semester	1.00
Change of grade fee (unless the change is the responsibility of the University)	3.00
Examination, special equivalency, per credit hour (the maximum fee in any one subject shall not exceed \$45)	7.50
Duplicate activity card	1.00
Transcript fee	1.00
(\$1.00 for first copy on every order, plus \$.50 for each additional copy)	
Automobile registration and parking fee:	
Beginning of school year	5.00
Beginning of Second Semester	3.00
Traffic violation fines	1.00 to 5.00
Special service fee for unregistered graduate students who are using University facilities:	
Each semester	20.00
Each term of summer session	10.00
Thesis binding (4 to 5 copies)	11.00 to 13.75
Registration in Evening School. (All daytime students will be required to pay an additional fee of \$3 per credit hour for all hours carried under the Evening School program.)	

FEES FOR INSTRUCTION IN MUSIC AND SPEECH

For fees in special private instruction in music and speech see the General Catalog, University Fees section.

RENTALS

Harp, harpsichord, organ rental, one hour each day, per semester	\$10.00
Piano rental, one hour each day, per semester	7.50
Each additional hour per day, per semester	6.00
Practice room without a piano, one hour each day, per semester	4.50
Each additional hour per day, per semester	3.00
Locker rent (McKay Building and Eyring Science Center):	
1 semester	1.50
2 semesters	2.50
2 semesters and Summer Session	3.00
Key deposit	1.00
Replacement of lost key	1.50

DEPOSITS

Gymnasium towel check and padlock deposit (Maximum refund is \$2.50.)	\$ 3.00
Chemistry (each laboratory class)	1.00

Student Academic Services

Office of Admissions and Records

The Office of Admissions and Records is primarily a service office for all Brigham Young University students from the date they apply for admission until they are graduated from the University. It is a service agency also to parents, to the faculty, to the State, and to various agencies eligible to receive information regarding the records of these students.

Student academic services performed by the Office of Admissions and Records for the University include the following:

- Admission of students
- Registration of students
- Preparation of class schedules
- Assignment of instructional space
- Assignment of office space
- Evaluation of foreign student credit
- Graduation summary reports
- Academic grade reports
- General education program evaluation
- Transcripts of University credit
- Preparation of graduation lists

The director of Admissions and Records has general supervision over the services listed above. It is his responsibility to initiate and to recommend regulations, policies, and procedures for implementing these student academic services and to administer the program of the Office of Admissions and Records as approved by the administration of the University.

Admission

Students who apply for admission and who are accepted by Brigham Young University are required to maintain ideals and standards in harmony with those of the Church of Jesus Christ of Latter-day Saints.

New Students from Foreign Countries. To be admitted to the University a student from a foreign country must present proper credentials.

Foreign student applications received on or before April 15 will be considered for the first semester. Applications received on or before August 15 will be considered for the second semester. Applications for the summer session should be received on or before January 15.

Former B.Y.U. Students. All former B.Y.U. students who have discontinued school for one semester or more must apply for readmission. Readmission applications are furnished by the Office of Admissions and Records upon request.

Application for readmission should be made at least thirty days prior to registration.

Repeating Students. Registration packets are prepared for all students in attendance at the University the previous semester.

Summer School Students. The same admission requirements as already outlined apply to new summer school applicants.

Those students who were in attendance at either of the two previous summer sessions need not apply for readmission. Registration packets are prepared for them.

Notice of Acceptance. A notice of acceptance will be mailed promptly to all new and former students who have been accepted by the University. A student with deficiencies will receive an answer to his application for admission outlining the problems involved.

Registration

Registration Procedure. Details of the registration procedure are outlined in the class schedule issued each semester by the Office of Admissions and Records.

Time of Registration. Students are urged to register on the days set aside for registration (see University Calendar). A late fee is charged for each student who does not complete his registration on the specified days. The term "registration" refers to the entire procedure, including the payment of fees. A student may enroll in any class during the first three weeks of the semester if he has the permission of the instructor of the class and approval of the dean of the Graduate School.

Withdrawal from Classes. Students discontinuing registration at the University are required to clear their termination through the office of the dean of the Graduate School.

Any student withdrawing from individual classes shall clear with the dean of the Graduate School.

- a. If a student officially withdraws from a class the first three weeks of a semester, the permanent record will show no registration for the class in question.
- b. A student who is doing passing work in a course may drop the class between the third and twelfth week if such action is recommended by the teacher, the student's adviser, and the dean of the Graduate School. A grade of "W" will be assigned for the class. A student who is doing failing work in a course may drop the class after the first three weeks if he has the approval of his adviser and the dean of the Graduate School and the teacher's signature. A grade of "WE" counts the same as an "E" grade in computing the grade-point average.
- c. If a student drops a class any time during the semester without officially withdrawing, he will receive a grade of "UW" (meaning unofficial withdrawal) in each course so dropped. This will indicate that the student has failed to clear officially with the University. A "UW" grade counts the same as an "E" grade in computing the grade-point average.

Withdrawal from Evening School Classes. Students who withdraw from classes for which they have registered in the Extension Services office must do so by notifying that office and completing withdrawal forms. An evening school student who does not properly withdraw will receive a failing grade.

Registration of Prospective Secondary Teachers. All certificates for teaching, counseling, supervising, administration, and library work in the public schools of Utah are granted by the State Department of Public Instruction.

When all requirements for state certification have been fulfilled, students of the University who are registered in any of its colleges or in the Graduate School will be recommended for certification by the dean of the College of Education. This recommendation will be given just as readily to prospective secondary teachers who have registered in other colleges as to those who have registered in the College of Education; the dean of the College of Education acts merely in an administrative capacity as the representative of the University. However, all students in the teacher certification program, regardless of their college registration, are required to have an assigned adviser in the College of Education to approve the professional education sequence courses. Assignment of education advisers is made in the Teacher Certification Office.

Students who desire state certificates should make application with the dean of the College of Education through the Teacher Certification Office and not with the State Department of Public Instruction.

Completion of Registration. When the student has followed the prescribed registration procedure and has paid his fees, his registration is complete. The University will hold the student responsible for the completion of the courses for which he has been enrolled, unless he obtains approval for a change in registration or files an official withdrawal from the University.

Complete Withdrawal from the University. Any student withdrawing from the University after the third week must be doing passing work in his classes if he is to discontinue without academic failure.

Records

Classification of Students. At the beginning of each semester students will be classified for that semester.

A student who has completed all requirements for the bachelor's degree is classed as a graduate student. A graduate student or a student holding a bachelor's degree from a four-year accredited institution may register at Brigham Young University as follows:

- a. In the Graduate School under full degree-seeking status.
- b. In the Graduate School as a non-degree student.
- c. In an academic college of the University seeking a second bachelor's degree.

Credits. A student may have credit entered on the books of the University as follows:

- a. For work done in the regular courses offered by the institution.
- b. For work done in an accredited university when such credit is to be used toward a graduate degree at Brigham Young University. Credit from other schools should be filed with the Office of Admissions and Records upon application for admission to the University.

A fee of \$7.50 per credit hour is charged for special examination provided the total fee for any one subject does not exceed \$45.

By paying of an auditing fee a student may obtain permission to audit courses of instruction. Under no circumstances can credit be obtained by means of special examinations for courses which have been audited.

Grading System. The present grading system uses the letters A, B, C, and D, to indicate that the student receives credit, and E to indicate that no credit is allowed.

The "A" grade is given only to students whose intellectual capacity and actual academic achievement are of exceptional quality. Work of a quality somewhat higher than average but not of exceptional quality receives a B+, B, or B—. C+, C, or C— indicate that the student has completed classroom work, outside assignments, and examinations in an average manner.

Students who fail to reach the average academic achievement, but who do work of a quality still acceptable to the University are given a D+, D, or D— grade. D+, D, or D— credit is not acceptable toward a graduate degree. Students who fail to achieve work of minimum university quality receive an "E" grade. This grade mark draws no credit.

The letter "I" (incomplete) is used to indicate that the work is not yet completed. It should be given **only** when special arrangements for the completion of the specific work involved have been made between teacher and student. The "I" should **never** be given when the student has failed or is failing the course. A grade of "I" changes automatically to "E" in the Office of Admissions and Records unless the work is completed within one year from date the grade is given.

The letter "T" is used to indicate satisfactory progress in thesis work for the amount of credit registered for in a given semester. The final grade is given when the thesis is completed. The grade "I" should not be used to indicate thesis or dissertation progress.

When a thesis or dissertation has been completed, any one of the following marks may be given: (1) "F" for failure; (2) A specific grade indicating that the thesis is acceptable to the department on a credit basis; or (3) "G" when the thesis has been satisfactorily completed but where the department desires to register no grade for thesis or dissertation credit.

The letter "P" (passed) is used only in connection with the student teaching program of the College of Education of the University.

No final grade once recorded in the Office of Admissions and Records shall be changed except to correct the record when an error in calculation has been made by the teacher, by the Data Processing Department, in the Office of Admissions and Records, or by action of the Academic Regulations Committee. When such corrections need to be made, an official "Teacher Grade Change Authorization" form must be filled out; signed by the teacher, the chairman of the department, and the dean of the college; and sent directly to the Office of Admissions and Records.

Student Personnel Services

The Student Personnel Services offer valuable assistance in the following areas that affect graduate students: academic standards, counseling service, foreign students advising, health services, Indian students advising, student organizations and social life, and student publications.

Dean of Students. The dean of students is director of Student Personnel Services. As such, he is expected to coordinate the agencies at work on student problems. He initiates and recommends to the administration needed policies and procedures in student life. It is his responsibility to administer the program recommended or approved by the administration in the various areas of Student Personnel Services.

Assistant Dean of Students. The assistant dean of students is the director of counseling and advising services for the University. As such he is director of the University Counseling Service, which provides professional services outlined in the Counseling Service description below. In addition, the assistant dean of students coordinates and provides leadership in the advising offered by the academic faculty, the housing staff, and other personnel of the University. His primary responsibilities are administering existing programs, providing training and education for counselors and advisers, and recommending policies and procedures in student counseling and advising for the University.

Counseling Service

The primary function of the Counseling Service is to help normal students make realistic decisions regarding their University careers. This organization provides the following services for graduate students: (1) counseling—educational, vocational, and personal problems; (2) psychiatric; (3) testing; and (4) occupational information.

Counseling. The counselors offer assistance to each individual student, helping him make wise decisions in educational, vocational, and personal problems. The mature student will accept responsibility for the decisions arrived at in such counseling sessions.

Psychiatric Service. Limited psychiatric service is available for students with serious emotional problems. A psychiatric team composed of a psychiatrist, a clinical psychologist, and a psychiatric social worker is available to make evaluations and recommendations concerning treatment. Limited psychiatric treatment is available for students who can be treated in a university setting. Such treatment is not available to all students, and referrals are often made to private agencies either in Utah or in the students' home town. As in the case of all other counseling done in Counseling Service, psychiatric treatment is completely confidential.

Testing. Although basic tests of achievement, ability, interest, and adjustment are given to all new lower division students, upper division and graduate students may avail themselves of the tests. The testing service provides psychological test data for the use of counseling and registration advisers, placement tests for various academic groups at the University, and assistance in the preparation, administration, and scoring of subject-matter tests as requested by various departments in the University.

Occupational Information. A comprehensive, current collection of essential occupational information is maintained in the Counseling Service Library. Current catalogs of the major universities and technical schools are also on file. These materials are available to all students seeking information about particular vocational opportunities or information about employment in general.

Foreign Students Adviser

Services of the foreign students adviser are available to all students from countries outside of the United States. All alien students are expected to clear with him. Foreign students coming to the University should **report first to the Foreign Students Office** in the Abraham O. Smoot Administration and General Services Building.

Student Health Service

The Howard S. McDonald Student Health Center accommodates the health services, comprised of out-patient clinics and an in-patient unit for cases requiring bed care. The center functions 24 hours daily, 7 days a week during school terms and is available to any regularly enrolled full-time student whose fees include those services for the semester in which he is registered. Summer students are included. Medical care to all eligible students is limited to the facilities and personnel in the health center.

The following services are provided without extra charge:

1. An initial complete physical examination, required of all entering students, to be performed at the health center and to include screening chest x-ray, audiometry, and urinalysis. This examination is also mandatory for students re-entering after a two-year absence.
2. Consultation with general physicians and specialists (by appointment) in the health center during regular clinic hours, 8:30 a.m. to 4:30 p.m. This includes specialty clinics in orthopedics, general surgery, gynecology, internal medicine, chiripody, and ear, nose and throat.
3. First-aid treatment any time during the 24 hours of each day.
4. Immunizations as required for small pox or diphtheria.
5. Physical therapy as recommended by a health center physician.
6. Routine laboratory tests.
7. Ten days of bed care in any one semester in the health center, as recommended by a health center physician, after which a minimum charge of \$5.00 per day is made.
8. Within the limits of its personnel and facilities, and at the discretion of the director, the treatment of chronic disease suffered by students.

Some services require an additional charge and are supplied to the student at cost. These are services in this category:

1. Meals while the patient is in the center.
2. Drugs on prescription of a health center physician.
3. Special diagnostic laboratory tests.
4. Special immunizations, i.e., poliomyelitis, influenza, etc.
5. X-rays other than "screening" films. The health center regularly employs the technical personnel to take and a radiologist to interpret the x-ray films. The student pays only the cost of the materials.
6. After-hour calls made by a physician in the clinic. The student pays \$5 for each call. For house calls the student pays \$10.
7. Rental of crutches.
8. Immediate notification of parents or guardian by the health center when a student is taken ill.

These services are not available:

1. Major surgery or off-campus hospitalization or medical care.
2. Dental service.
3. Obstetric service.

4. Eye refractions, glasses, prostheses, hearing aids, etc.
5. Routine physical examinations.

STUDENT HEALTH AND ACCIDENT INSURANCE PROGRAM

To compliment the services of the Student Health Center a supplemental insurance program is offered, which is available to all full-time students. This voluntary program, fully endorsed by the University, provides for a wide range of medical services at minimal costs. All students not otherwise protected by a health insurance plan are urged to accept this excellent plan specifically designed for our students. Full details are available from the health center.

University Standards

The maintenance of standards of honor and integrity, of graciousness in personal behavior, of Christian ideals in everyday living, of a high standard of morality, and of abstinence from alcohol and tobacco is required of every student.

Any pronouncement of disciplinary measures made by the President of the University becomes a part of these regulations. Violations of regulations may make the offender liable to suspension or expulsion from the University.

Veterans' Service

All veterans should have their military experience evaluated for credit by applying to the Office of Admissions and Records.

Korean (P.L. 550). Veterans who had active military duty any time after June 27, 1950, and prior to January 31, 1955, are eligible for veterans' benefits under Public Law 550, 82nd Congress.

All veterans must begin their schooling under the Korean G.I. Bill within three years of their date of discharge or separation from the service. New veterans must make an application for eligibility. This application can be made upon the veteran's release from active duty. DD 214, a certified copy of a marriage certificate, and/or child's birth certificate are necessary for veterans claiming dependents.

Veterans transferring their G.I. benefits from other schools to B.Y.U. must bring a certificate of eligibility restricted to B.Y.U. This must be obtained by making application at the last school attended. Delay will be avoided by beginning transfer proceedings in advance.

War Orphans Education Program (P.L. 634). War orphans must bring a certificate of eligibility restricted to B.Y.U. before entering school under the War Orphan Program. This may be obtained by making application at the nearest Veterans' Administration regional office.

For further information concerning any educational benefits problem, please write to Veterans' Coordinator, Abraham O. Smoot Administration and General Services Building, Brigham Young University, Provo, Utah.

Other Services to Students

Placement Center

The Placement Center, located in the Abraham O. Smoot Administration and General Services Building, assists graduating students and alumni to find desirable positions in their fields in business, industry, government, and education. This office works in close cooperation with deans and department chairmen.

The placement service includes a placement library where interested students may find books, articles, magazines, and brochures that will acquaint them with companies in which they may be interested and also books and pamphlets which will give advice on such matters as how to conduct oneself in an interview, how to write effective letters of application, how to find employment, etc.

All students are urged to register with the Placement Center early in the school year in which they will graduate. Early registration will enable that office to give the most effective possible assistance in finding employment for each graduate.

Student Employment

In the Placement Center, assistance is given to students in finding part-time employment. This includes help not only in placing students in positions on the University campus but also in finding part-time employment off campus and in finding work for board and room.

Students are encouraged not to attempt to earn their entire way through school. Such a program leaves little time for academic work (see scholarships). Furthermore, it is important to note that there is a maximum limit on the number of hours which a student may work on campus.

Students needing employment are urged to register with the Placement Center as soon as possible after they arrive in Provo and are available for work. Need weighs most heavily in deciding who shall receive leads for jobs. Hours available and possession of skills required by employers are also very important. Inasmuch as the number of students seeking part-time work is very high, those whose need is great are requested to report regularly at the Placement Center after filing their initial applications.

Students from foreign countries are required to obtain a work permit before they may take employment. Such students may receive assistance in obtaining the necessary permit from the foreign student adviser.

Religious Opportunities

Brigham Young University students have excellent opportunities for participation in religious activities. Among the means available are the following:

Brigham Young University Stakes. There are three Brigham Young University stakes. Each stake has a number of wards, usually between 200 or 300 members, organized specifically for students, providing maximum opportunity for active participation in the program of the Church. Spiritual growth and the development of a strong testimony are goals fostered by the stake and ward organizations, whose programs are closely integrated at all levels with that of the University.

All single students living away from home establish their membership records in one of the wards of the stake. Married students who attend the University may elect to have their membership records either in a ward of one of the B.Y.U. stakes or in nearby wards in which they reside. Membership records of students remain in B.Y.U. stakes until they terminate their schooling at the "Y." Married students who do not live in University housing may attend the University ward or the ward of their choice in the city.

Religious Organizations. In addition to the stakes and wards on campus we have several organizations that are primarily religious in nature and also are social and service groups.

Devotional Assemblies. Devotional assemblies, held each Tuesday, enable students to hear messages of spiritual power and depth from carefully chosen Church leaders. It is contemplated that during each year all members of the First Presidency and of the Quorum of the Twelve Apostles will address the student body in the Tuesday devotional assemblies.

Security and Traffic

The Security Office is a protective agency established for the benefit of students, faculty, and staff. It maintains effective liaison with the local police department, and is entrusted with the proper enforcement of campus rules and regulations. All matters concerning security or requiring police action should be referred to this office.

Another major responsibility of the Security Office is the control of campus vehicle traffic and parking. In each academic year University staff members and students who operate vehicles in Utah County regularly or occasionally shall register any such vehicles with the University Traffic Department. In the case of students this is a registration for identification only, not a parking permit. All staff members and students who plan to park on University parking lots between 7 a.m. and 5 p.m. on school days must display a parking permit on their motor vehicles. The student parking fee for motor vehicles is \$5 per year.

The Security Office also offers many other services to students and staff members, including a Lost and Found Department; the taking of fingerprints necessary for teaching certificates, government jobs, and A.F.R.O.T.C.; and an ambulance service in connection with the Student Health Center.

All campus roads will be closed on Labor Day each year to preserve the private ownership thereof.

Lyceums and Forums

Almost since its founding Brigham Young University has been bringing to its students distinguished men and women in arts and letters. The lyceums are evening programs of cultural value. Forum assemblies, held each Thursday morning, feature speakers and artists who can offer students a better understanding of our contemporary civilization. Following are a few of the scheduled appearances selected from the large number of programs during 1962-63:

Flor Peeters	Organist
Giorgio Tozzi	Bass Baritone
Eric Sevareid	CBS News Correspondent and Author
Walter Slezak	Star of stage and screen
Eleanor Dulles	Economist, Diplomat, and Educator
Tossy Spivakovsky	Violinist
Eldon Griffiths	Foreign Editor of <i>Newsweek</i>
Zabaleta	Harpist
Hans Conreid	Actor
Mary Costa	Soprano
Leon Volkov	Soviet Affairs Editor of <i>Newsweek</i>
Virgilia Peterson	Literary critic and author
John Browning	Pianist
Sir Anthony Wedgwood Benn	British political figure
James J. Wadsworth	American statesman

Student Housing

Campus Housing

The Office of Student Housing, functioning under the director of Student Housing, is established to assist students with their need for lodging. All inquiries or administrative problems relating to housing needs should be referred to this office.

Applications

A student who plans to enroll at the University and live in a University residence hall should make inquiry at the earliest possible date to the Office of Student Housing. A housing application form will be sent upon request. A \$10 application fee should be enclosed with the completed application form when it is returned to the Office of Student Housing. A residence hall assignment and appropriate "agreement forms" are prepared on the basis of the date of receipt of the application form by the Housing Office.

Acceptance

The validating of any campus housing reservation is contingent upon the student's official acceptance and admission to the University.

Residence Halls for Women

Housing for 1,548 women is provided on campus in 24 Heritage Halls, apartment-type buildings. Each apartment consists of a combination kitchen-dining-study room arrangement, three bedrooms, and a bath. In addition, there are large living rooms, a recreation room, head resident apartment, and laundry and storage facilities in each building. Six girls occupy an apartment and live cooperatively, preparing their own meals. The apartments are completely furnished except for bedding, kitchen utensils, and dishes. The approximate annual rate for these accommodations is \$250. Food is purchased cooperatively by the residents of each apartment.

Help in homemaking experiences of budgeting, buying, meal planning, and the selection, care, and construction of clothing is available from specialists assigned to Heritage Halls. In addition, a specialist is available to assist students in planning social activities, developing recreational skills, and learning wise use of leisure time.

Special arrangements have been completed to accommodate 500 single women students in the new Wymount Terrace apartments. There are 462 apartments in Wymount Terrace, the new married student housing project. Of this total, 102 apartments will be used to accommodate women students.

The Wymount Terrace apartments vary in size from one to three bedrooms. Girls will be housed in groups of three to six, depending on the size of the unit, and will share in a group-living experience similar to that of Heritage Halls, with adequate head-resident supervision in each building.

Wymount Terrace apartments are located two blocks north of Heritage Halls on Ninth East. The apartments are furnished except for bedding, kitchen utensils, and dishes. The approximate annual rate is \$250.

The University operates three residence halls for women where board and room are provided: Amanda Knight Hall, Budge Hall, and Merrill Hall. The halls, completely furnished, provide every modern convenience, including well-planned food service. A trained head resident lives in each hall. The approximate annual rate for these accommodations is \$615.

Each woman student who desires to live on campus should consider carefully the type of accommodations desired in view of her economic needs, time available for activities within her housing situation, and type of experience desired. Agreements are made for the year, and moving from one type of accommodation to another during the year cannot be arranged.

Residence Halls for Men

Board and room services for 270 men are provided in Knight Mangum Hall, located on the campus. This hall provides sleeping rooms, dining hall, living and social room, study room, head resident apartment, and adequate laundry and storage rooms.

Board-and-room services for 1,170 men are provided on campus in six new buildings known as Helaman Halls, which form a beautifully designed residence hall development. Five residence hall buildings are conveniently grouped around an attractively planned and developed central building. Each residence hall accommodates 234 students, with two men sharing each bedroom. In addition, living rooms, study room, central shower areas, recreational rooms, adequate laundry and storage facilities, and a head resident apartment are located in each building. These halls provide some of the best student living experiences offered on any university campus. The central building features spacious dining rooms and a snack bar, providing the excellent food service for which B.Y.U. is noted. This building also contains beautiful living rooms, recreational areas, administrative offices, and other management facilities such as mail rooms, gun storage areas, and laundry and dry cleaning pick-up stations. The approximate annual rate for these accommodations is \$615.

Homes for Graduate Men

Board-and-room service for a limited number of single graduate men is available in large homes used exclusively for graduate students. They are adequately equipped and provide for the specialized needs of the graduate student. The approximate annual rate for these accommodations is \$615.

Apartments and Homes for Married Students

Family accommodations for 150 married couples and their children are provided in a housing development known as Wyview Village. In addition, Wymount Terrace, a new married students' housing project, at present accommodates another 198 families. All units in married-students' housing are assigned according to family size. (Note: The Wymount Village project has been discontinued to make way for campus growth and development.)

Wyview Village consists of 150 prefabricated homes purchased in 1956 from a federal government air base and moved to a site adjacent to the campus. There are 100 two-bedroom and 50 three-bedroom homes, with monthly rental rates of approximately \$50 for the two-bedroom and \$55 for the three-bedroom homes. In addition, each family pays for its electricity.

Wymount Terrace, the new married-students' housing project, eventually will consist of 462 apartments: 168 one-bedroom units, 264 two-bedroom units and 30 three-bedroom units. The project will include 24 buildings, an administration building, and three laundries. A series of four buildings will form quadrangles with grass courtyards in the center. The various complexes will form a trapezoid around a park and family recreational area. The buildings, constructed on a lift-slab principle, will be of painted concrete block with extensive use of white cast stone grill work and painted stucco paneling. Balconies or porches for all apartments will open on the courtyards. In addition to various numbers of bedrooms, apartments will include an all-tile bathroom, kitchen with modern appliances, garbage disposal units, gas ranges and electric refrigerators, and an attractively decorated living room.

The Residential Housing Office can assist the married family wishing to live off-campus in finding a suitable apartment in the Provo community. Approximately 1,000 apartment units are available to married couples.

Residential Housing

In addition to the University Residence Halls, University-approved student housing is available in private homes in the communities of Provo and Orem. Such housing consists of sleeping rooms, apartments, light house keeping, and board-and-room arrangements. To receive University approval these facilities must meet certain minimum specifications. Students living in the community are expected to abide by the living standards of the University.

Listings

Up-to-date listings of approved facilities are maintained by the Residential Housing Office, 1271 North 900 East, Provo, Utah. This office is established to assist students upon their arrival in Provo to find suitable quarters if they desire to reside in the community. It is impractical for student to make arrangements with landlords by mail as listings change daily and many landlords like to interview their prospective tenants.

Rates

Rates for residential housing accommodations vary with the type of service provided, and consequently only a general indication can be given here. Sleeping rooms rent from \$15 to \$25 a month. Apartment accommodations run from \$17 to \$25 per month per student, and board and room is available at \$55 to \$65 a month. Apartments for married students can be obtained at a rate of approximately \$45 to \$70 per month.

Approved Housing

All students attending the University who are not living on campus or at home are required to live in University-approved housing and to keep the University informed of any change of residence. Change of address cards are available in all housing offices and at the Information Booth.

Rental Agreements

A student planning to live either in campus housing or in off-campus residential housing may expect to sign a rental agreement for the accommodations he will occupy. He should be prepared to live by the terms of this agreement once he has signed it. Misunderstandings and financial loss can be avoided by a student if he will read and familiarize himself with the terms of the agreement before signing. All campus accommodations are available on an annual basis only.

Time of Arrival

Residence halls are not open to a student prior to the announced opening date, usually the day before freshman orientation. The University does not advise a student who is going to live in campus housing to arrive before that date. It is unwise for a student with nothing to do to live in a hotel or motel where there is no University supervision.

Through the listings from the Residential Housing Office, accommodations in the community may be obtained in a comparatively short time. Very little time is required for a student to unpack and get settled whether it be on or off campus. It is best to arrive during office hours—8:00 a.m. to 5:00 p.m.

Food Service

Regular meal service is provided for students at five different cafeterias on the campus. Four of these are operated as part of the board and room service of residence halls. It is possible for a student living off-campus to buy a meal ticket at reduced prices and eat in one of these places. The fifth cafeteria is in the Joseph Smith Building where meals are served at reasonable prices on a cash basis.

The University operates three snack bars—one in the Joseph Smith Building, a second in the George Albert Smith Fieldhouse, and a third in the Helaman Halls Cannon Center. Food is available in them throughout the day. Food may also be secured through vending machines located throughout the campus. Costs of meals and food service are kept as low as possible, consistent with sound operating management.

The University operates a creamery where milk, ice cream, and other dairy products may be purchased by students and faculty at very reasonable prices. Students preparing their own meals find this service desirable and economical.

List of Courses

General

Course Numbering System.

Course Number	Type of Course
500 to 599	Advanced undergraduate or graduate
600 to 799	Graduate

Credit Hour Designation. The three-number code for credit hours, listed in parentheses following the course title, has the following significance:

First number:	Semester hours of credit
Second number:	Class hours of lecture, recitation, or seminar meeting per week or minimum hours of individual study required per week
Third number:	Laboratory hours required per week or hours of field study or individual research per week

Cross Referencing of Courses. Each course is listed completely only once in the catalog. If the course may count in another department, it appears in a special grouping at the end of the course listing for that department.

Graduate Courses. Graduate credit is given for courses in the 500, 600, and 700 series if the student is registered in the Graduate School for these courses or if the student is a last semester senior and meets the Graduate School requirement for reserving these courses for graduate credit. No graduate credit is given for such courses with a lower grade than "C." No graduate credit is given for correspondence courses.

Reservation of Right to Change Courses. At the time of printing of this catalog, the University intends to give the courses listed herein, but reserves the right to eliminate or discontinue any of them or to add new courses.

Professors listed under each department title include members of the graduate faculty only.

Accounting

Professor: Smith.

Associate Professors: Johnson, Orton (chairman, 350 JKB), Skousen.

Requirements

Master of Accountancy Program

The professional degree, Master of Accountancy (MAcc.), is offered by the Accounting Department. Students now actively working toward the Master of Science or Master of Arts degrees in the Accounting Department will be able by special arrangements, to complete requirements and receive the Master of Accountancy degree; the other degrees will no longer be granted. The program is available to those with undergraduate degrees in Accounting or in other departments. The following courses or their equivalents must have been taken prior to entering the program or must be taken without being applied to the credits required in the Master of Accountancy program:

Accounting 211 ,212, 301, 302, 312, 342.
Economics 111, 112.
Mathematics 110.
Statistics 221.

Specific requirements for the Master of Accountancy degree include:

- (1) Completion of at least 32 hours of graduate or properly approved upper division work. The program is to be approved by the student's advisory committee and the department chairman during the first semester of work. This 32 hours of work must include the following: (a) Accounting 512 (Advanced Cost Accounting), (b) Accounting 615 (Controllershship), (c) Accounting 675 (Theory of Accounts and State-ments), and (d) Accounting 691 (Research Seminar). The student may elect to write a thesis (Accounting 699) instead of taking Ac-counting 691; up to six hours of credit may be allowed for a thesis.
- (2) A minor of 9 or more hours of work in a selected graduate field in any department of the university, such minor to be approved by the department chairman and the advisory committee. In lieu of a minor in one field, work in fields related to accounting may be elected. If this choice is made, at least 6 hours of work must be selected from such related areas and up to 12 hours of such work will be accepted toward the 32-hour requirement upon approval of the advisory com-mittee and the department chairman. Following is a list of courses in related areas from which selection may be made. Other courses may be used upon special petition and approval of the department chairman and the Graduate Dean:

a. Business Management.

- (1) 348 Financial Administration (3 hours). (Permitted only if not taken for undergraduate requirement.)
- (2) 420 Human Relations in Administration I (3 hours).
- (3) 521 Human Relations in Administration II (3 hours).
- (4) 450 General Insurance (3 hours).
- (5) 565 Life Insurance (2 hours).
- (6) 566 Property and Casualty Insurance (2 hours).
- (7) 451 Investments (3 hours).
- (8) 571 Management of Financial Institutions (3 hours).
- (9) 574 Investment Management (3 hours).
- (10) 552 Advanced Corporation Finance (3 hours).
- (11) 567 Real Estate Administration (2 hours).
- (12) 577 Business Enterprise and Moral Responsibility (2 hours).
- (13) 585 Industry Analysis (3 hours).
- (14) 589 Business Policy (3 hours).
- (15) 591 Research and Diagnosis of Business Problems (1-2 hours).
- (16) 480, 481 Executive Lectures (1 hour). (Attendance at sem-inars with lecturers also required.)

b. Economics.

- (1) 345 Intermediate Economic Analysis (3 hours). (Permitted only if not taken for undergraduate requirement.)
- (2) 346 Intermediate Economic Analysis (3 hours). (Permitted only if not taken for undergraduate requirement.)
- (3) 453 Money and Banking (3 hours).
- (4) 454 Real Estate and Urban Land Economics (3 hours).
- (5) 461 Labor Problems and Labor Relations (3 hours).
- (6) 462 Labor and Public Policy (3 hours).
- (7) 575 Government Finance (3 hours).
- (8) 576 Government and Business (3 hours).
- (9) 580 History of Economic Thought (3 hours).

c. Statistics.

- (1) 330 Statistical Methods Used in Business (3 hours).
- (2) 341 Intermediate Probability (2 hours).
- (3) 432 Industrial Statistics (2 hours).
- (4) 433 Operations Analysis (2 hours).
- (5) 434 Sampling Principles (2 hours).

- (3) Successful passing of a written comprehensive examination to be given before the oral examination may be scheduled.

The regulations of the Graduate School as given elsewhere in this catalog will apply to the following: (1) admission to the Graduate School; (2) graduate credit for seniors; (3) transfer credit; (4) student load; (5) scholastic standards; (6) advisory committee; (7) English 99; (8) course outline and revision sheets; (9) amount and distribution of credit, except as modified above in regard to the total number of hours required; (10) thesis requirements, when the thesis is elected; and (11) final oral examination.

Graduate Courses

- 501. Advanced Accounting.** (3:3:0) Su. (1963) S. (1964) F. (1964). Pre-requisite: Accounting 302 Skousen
Includes joint ventures, consignments, installments, receiverships, estates and trusts, statement of affairs, and municipal and governmental accounting.
- 502. Advanced Accounting.** (3:3:0) F. (1963) Su. (1964) S. (1965). Pre-requisite: Accounting 302. Skousen
Home office and branch accounts and parent and subsidiary accounting.
- 512. Advanced Cost Accounting.** (3:3:0) F. (1963) Su. (1964) S. (1965). Prerequisite: Accounting 312. Orton
Budgeting, standard costs, cost analysis, and capital budgeting.
- 521. Advanced Tax Problems.** (3:3:0) Su. (1963) S. (1964) F. (1964) Pre-requisite: Accounting 420. Staff
Advanced study of federal income tax, estate and gift taxes, and special problems in corporate taxation.
- 555. Data Processing Systems.** (3:3:0) F. Prerequisite: Accounting 355. Johnson
Principles governing design and installation of accounting systems and the selection of equipment for optimum performance in data processing cycles.
- 557. Advanced Computer Programming.** (3:1:3) S. Prerequisite: Accounting 456. Johnson
Emphasis on the solution of practical problems in data processing. Individual work on the University's computer and comparison of various computers in current use.
- 596. Accounting Internship.** (1-3:0:Arr.) F.S.Su. Recommended prerequisite: Accounting 465.
Internship must be arranged in advance with department and company.
- 615. Controllership.** (3:3:0) Su. (1963) S. (1964) F. (1964) Prerequisites: Accounting 302 and 512. Orton
Organization of controller's office, control techniques, interpretation of data, and policy formulation.
- 675. Theory of Accounts and Statements.** (3:3:0) F. (1963), Su. (1964) S. (1965). Prerequisites: Accounting 302, 312. Smith
History and development of accounting and financial statements, their meaning and interpretation. Problems in current accounting theory will be considered.
- 686, 687. C.P.A. Problems.** (3:3:1) F. S. Prerequisites: Accounting 302, 420, and the following which should be taken before or concurrently: Accounting 465, 501, 502.
Preparation for professional examination.
- 691. Research Seminar.** (1-3:1-3:0) F.S.Su. Prerequisite: Approval of graduate advisory committee. Orton
Seminar in current topics. Includes writing a research paper in proper form.

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| <p>693. Reading and Conference. (1-3:1-3:0) F.S.Su.
Subject to be arranged with instructor.</p> | <p>Staff</p> |
| <p>699. Thesis for Master's Degree. (1-6:Arr.:Arr.) F.S.Su.</p> | <p>Staff</p> |

Agricultural Economics

Associate Professor: Corbridge (chairman, 370 HGB).
Assistant Professor: Hubbard.

Requirements

A graduate degree is not offered in agricultural economics, but graduate credit in the following courses may be applied toward a minor in a field closely related to agricultural economics.

Graduate Courses

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| <p>525. Production Economics. (2:2:0) S. Prerequisite: Economics 346. Corbridge
Principles concerning the optimum combination of productive resources within the farm firm and between firms.</p> | |
| <p>580. Agricultural Policy. (2:2:0) S.
The theoretical and institutional setting of the agricultural industry, the objectives of farm policy, and the means of achieving these objectives. Includes a study of existing and proposed farm legislation.</p> | <p>Hubbard</p> |
| <p>590. Seminar. (1:1:0) S.</p> | <p>Staff</p> |
| <p>595. Individual Readings. (1-3:Arr.:Arr.) F.S.</p> | <p>Staff</p> |
| <p>597. Individual Research. (1-3:Arr.:Arr.)</p> | <p>Staff</p> |

This course also counts in agricultural economics:

Statistics 531. Experimental Design. (2:2:0)

Agronomy

Professors: Farnsworth (chairman, 173 B), Laws.
Associate Professor: Allred.

Requirements

A student preparing for graduate work in agronomy is urged to obtain a thorough knowledge of introductory physics, chemistry, mathematics, botany, bacteriology, and geology. Opportunity will be afforded for further study in some of these subjects after entering the Graduate School, but a student deficient in these foundation courses cannot expect to receive an advanced degree in the minimum time otherwise required.

The Agronomy Department has established the following minimum requirements for permission to study toward a Master of Science degree.

Satisfactory completion of the following undergraduate courses or their equivalents: Chemistry 111, 112, 113, 211, plus one year of upper-division chemistry; Mathematics 111, 112, 213; Bacteriology 121; Physics 211, 212, 213, 214; Botany 101, 440. If a student is emphasizing crops, Botany 440 may be applied toward the graduate program and need not be completed as undergraduate work. If, however, this course has been taken as undergraduate work, more time will be afforded for graduate courses.

Graduate Courses

506. **Soil and Plant Analysis.** (3:1:6) S. Prerequisites: Agronomy 305, Chemistry 220 or 221, or consent of instructor. Farnsworth
Laboratory chemical analysis of soils and plant materials; use of various methods of analysis as employed in soil testing laboratories and in research.
605. **Chemistry of Soil-Plant Relationships.** (4:3:3) Laws
607. **Soil Physical Conditions.** (3:2:3) S. Laws
614. **Advanced Soil Microbiology.** (3:2:3) S. Prerequisites: Agronomy 305, Bacteriology 121, Chemistry 221. Farnsworth
659. **Advanced Plant Breeding.** (2:2:0) F. Allred
694. **Seminar.** (1:1:0) F.S.Su. Staff
697. **Research.** (Arr.) F.S.Su. Staff
698. **Agricultural Literature.** (Arr.) F.S.Su. Staff
699. **Thesis for Master's Degree.** (1-6:Arr.:Arr.) F.S.Su. Staff

Animal Husbandry

Professors: Cannon, Morris, Shumway (chairman, 280 HGB).

Associate Professor: Richards.

Assistant Professors: Hoopes, Wallentine.

Requirements

A student contemplating graduate study in animal husbandry must have received his bachelor's degree in this field or have completed courses with an equivalent background. His undergraduate courses should have included approximately 35 hours taken from the following subjects or their equivalent, of which twenty hours made up his minor:

Bacteriology 121, 321, 331, 371, 501.

Botany 101, 376.

Chemistry 102, 111, 112, 113, 321, 284, 351, 352, 581, 582.

Statistics 221, 331.

Zoology 365, 376.

The student may select his minor field from among the following areas: Agricultural economics, agronomy, bacteriology, botany, chemistry, education, or zoology.

All students seeking a master's degree in animal husbandry should enroll in English 99, a non-credit course, "Problems in Thesis Writing."

Graduate Courses

507. **Animal Nutrition.** (4:3:2) F. Morris
515. **Advanced Animal Breeding.** (3:3:0) S. Richards
560. **Advanced Dairy Production.** (3:2:3) S. Richards
571. **Advanced Poultry Practices.** (1-2:0:Arr.) F.S. Morris
592. **Seminar.** (2:2:0) F.S. Cannon
- A critical review and analysis of current research, findings, and methods in animal agriculture.

601. **Experimental Animal Techniques.** (2:2:0) F.S. Prerequisite: Statistics 221. Cannon
660. **Advanced Livestock Management.** (2:1:3) S. Cannon
- 691, 692. **Animal Husbandry Research.** (1-2:0:3-6) F.S. Staff
- 694, 695. **Animal Husbandry Research.** (1-2:0:3-6) F.S. Staff
699. **Thesis for Master's Degree.** (2-6:Arr.) F.S.Su. Staff
- This course also counts in Animal Husbandry:
Statistics 531. Experimental Design. (2:2:0)

Archaeology

Professor: Jakeman.

Associate Professor: Christensen (chairman, 139 M).

Requirements

Admission as a graduate major in archaeology, leading to the Master of Arts degree, ordinarily requires the previous completion of an undergraduate major in this subject. Students desiring admission will be examined by the department. If admitted, the student may be required to take additional undergraduate courses which the department considers necessary to complete his background.

The following courses in this department are required of the candidate for the master's degree majoring in archaeology (unless previously taken for undergraduate credit): 551, 571, 690, and 695 or 696.

A thesis is required of the candidate for the master's degree majoring in archaeology. It may be either a field report or an interpretative study and must present worthwhile new data or concepts, must be of professional caliber, and must be suitable for publication.

The candidate for the master's degree in archaeology is required to present a reading knowledge of German, French, or Spanish. If he desires to substitute some other language in fulfillment of this requirement, he must demonstrate its pertinency to his thesis subject.

Graduate Courses

500. **History and Theory of Archaeology.** (2:2:0) F. Prerequisite: Archaeology 200. Christensen
 A survey of the historical development of archaeology, with special attention to the theoretical foundations upon which this discipline has been built.
551. **Methods of Archaeological Research: General and Field.** (4:0-2:4-8) F. Prerequisite: Archaeology 200. Christensen
 The steps in an archaeological research project; an introduction to field and laboratory methods, including student excavation of a site in Utah Valley.
571. **Methods of Archaeological Research: Interpretative.** (2:2:0) S. Prerequisite: Archaeology 551. Christensen
 Interpretation of empiric archaeological data as to culture units and their character and content; methods of chronological interpretation; and practice in archaeological ethnography and historiography.
590. **Recent Developments in Archaeology.** (4:2:6) Not given this year. Prerequisites: any two upper-division courses in archaeology or consent of instructor. Jakeman
 Includes individual reports in two of the following fields: Near Eastern-biblical, Mediterranean (Aegean-classical-Christian), northern European,

African, central and eastern Asiatic, Oceanian, Middle American, South American, North American.

The emphasis of the following courses is on the two fields of archaeology bearing upon the fundamental problem of the origin of civilization in the Old and New Worlds; i.e., Near Eastern and Middle American-Andean archaeology.

A course in Akkadian, Egyptian hieroglyphics, or Hebrew inscriptions should, if possible, be taken before the course "Library Research in Near-Eastern Archaeology" (695), while the reading of ancient Maya and Aztec hieroglyphics (631) should, if possible, be taken before the course "Library Research in Middle American-Andean Archaeology" (696).

An undergraduate minor or its equivalent is prerequisite to each of the following courses:

- 631. Introduction to the Reading of Maya and Aztec Hieroglyphics.** (3:1:6) F. Jakeman
- 641. Museum Methods and Teaching of Archaeology.** (3:1:6) Not given this year. Christensen
In-service training in archaeological museum methods and in the teaching of archaeology.
- 651. Advanced Field Methods of Archaeology.** (5:0:15) Su. Prerequisite: Archaeology 551. Staff
Further in-service training in field methods as a member of a Brigham Young University archaeological expedition to Middle America or the Near East.
- 690. Seminar in Historical Archaeology.** (2:2:0) S. Prerequisite: Archaeology 590. Must be taken concurrently with either Archaeology 695 or 696, or both. Jakeman
Problems in historical archaeology, particularly the archaeology of the scriptures.
- 695. Library Research in Near-Eastern Archaeology.** (2:0:6) S. May only be taken concurrently with Archaeology 690. Staff
Independent library research in oriental or biblical archaeology (Mesopotamian, Iranian, Egyptian, Syro-Palestinian, general oriental, or general biblical).
- 696. Library Research in Middle American-Andean Archaeology.** (2:0:6) S. May only be taken concurrently with Archaeology 690. Staff
Independent library research in Middle American or Andean archaeology (Mesoamerican or Peruvian archaeological and chronicled history, Mesoamerican hieroglyphic decipherment, or origins of Middle American-Andean civilizations).
- 697. Field Research.** (5-10:0:15-30) Su. Prerequisite: Archaeology 651 (may be taken concurrently). Staff
Participation in an archaeological excavation in Middle America or the Near East, with opportunity for independent field research at the same or a nearby site.
- 699. Thesis for Master's Degree.** (1-6:0:15) S.Su. Prerequisite: Archaeology 571. Staff

Art

Professors: Andrus, Mathews.

Associate Professors: Gunn (chairman, 315 E), Turner, Weaver, Wilson.

Fields

1. Painting and sculpture.
2. Design (crafts, commercial art, printmaking, interior design).

Requirements

A student expecting to major in painting and sculpture or design should have an adequate background in basic drawing, elementary design, and twenty semester hours of upper division work including art history. A student may take both his major and minor in the Department of Art. A departmental qualifying examination is required of all graduate students in art. If he is deficient in foundation training, opportunity may be given to correct this deficiency after he enters Graduate School.

Graduate Courses

501. **Aesthetics.** (2:2:0) S. de Jong
Theoretical and practical criteria of aesthetic values.
544. **Portfolio Preparation.** (2:2:2) S.F. Prerequisites: Art 122, 239, 341, 342. Gunn
An analysis of individual strengths and weaknesses. Specialization opportunities provided in various areas of commercial design and display. Preparation of portfolio emphasized.
546. **Advanced Commercial Art.** (2:2:2) S.F. Prerequisite Art 544. Gunn
Professional standards in a specialized field of commercial art emphasized. Students judged proficient by a faculty committee are given experience in a practicing agency.
580. **Mural Painting.** (2:2:2) F. Prerequisites: Art 310, 321 or 322. Staff
Historical backgrounds, design, and execution of murals.
615. **Period Furnishings and Other Decorative Material for Interior Design.** (2:2:2) F. Staff
621. **Advanced Drawing and Painting.** (2:2:2) F. Andrus
624. **Advanced Still Life Painting.** (2:2:2) F. Turner
625. **Advanced Still Life Painting.** (2:2:2) S. Turner
627. **Pictorial Composition.** (2:2:2) F. Turner
633. **Advanced Water Color Painting.** (2:2:2) F. Gunn
639. **Advanced Layout.** (2:2:2) F. Gunn
642. **Advanced Illustration.** (2:2:2) S. Gunn
650. **Advanced Relief and Intaglio Printmaking.** (2:2:2) F. Andrus
652. **Serigraphy and Color Lithography.** (2:2:2) S. Andrus
656. **Advanced Sculpture.** (2:2:2) F. Staff
664. **Advanced Ceramics.** (2:2:2) F.S. Wilson
666. **Advanced Metal and Jewelry Design.** (2:2:2) F.S. Weaver
668. **Art Education.** (2:2:0) S. Gunn
671. **Survey of Recent Studies in Art Education.** (2:2:0) F. Gunn
674. **Advanced Portrait Painting.** (2:2:2) F. Andrus
676. **Advanced Figure Painting.** (2:2:2) S. Andrus
680. **Advanced Mural Design and Painting.** (2:2:2) F. Staff
690. **Color.** (2:2:0) F. Andrus
692. **Color.** (2:2:0) S. Prerequisite: Art 690. Andrus
695. **Seminar.** (1:1:0) F.S. Staff

The following courses may be repeated (b and c) for credit. They are designed to offer a block of time for concentrated study toward maturity in one of the graduate art fields (1) painting and sculpture, (2) design.

- 617a. **Practical Problems in Interior Design.** (4:Arr.:Arr.) Prerequisite: Art 615. Staff
- 622a. **Advanced Figure Drawing and Painting.** (4:Arr.:Arr.) Prerequisite Art 621. Andrus
- 626a. **Advanced Painting.** (4:Arr.:Arr.) Prerequisite: Art 621 or 624 or 625 or 674 or 676. Staff
- 629a. **Advanced Design.** (4:Arr.:Arr.) Prerequisite: Art 310. Staff
- 635a. **Advanced Water Color.** (4:Arr.:Arr.) Prerequisite: Art 633. Turner
- 647a. **Advanced Commercial Art.** (4:Arr.:Arr.) Prerequisite: Art 639 or 642. Gunn
- 653a. **Advanced Printmaking.** (4:Arr.:Arr.) Prerequisite: Art 650 or 652. Andrus
- 658a. **Advanced Sculpture.** (4:Arr.:Arr.) Prerequisite: Art 656. Staff
- 665a. **Advanced Ceramics.** (4:Arr.:Arr.) Prerequisite: Art 664. Wilson
- 667a. **Advanced Crafts.** (4:Arr.:Arr.) Prerequisite: Art 666. Weaver
- 682a. **Advanced Mural Design and Painting.** (4:Arr.:Arr.) Prerequisite: Art 580 or 680. Staff
699. **Thesis for Master's Degree.** (1-6:Arr.:Arr.) Staff

Bacteriology

Professors: Beck, Donaldson, Larsen.

Associate Professor: Sagers (chairman, 110 B)

Assistant Professors: Bradshaw, Hoskisson.

Requirements

Adequate preparation for graduate work in the Department of Bacteriology presupposes satisfactory training in the physical and biological sciences. If a student is deficient in foundation courses, opportunity will be given after entering Graduate School to correct these deficiencies; however, such a student will not be able to receive the advanced degrees in the minimum time required of more qualified candidates. Prior to acceptance as a graduate major in the Department of Bacteriology, credit will be evaluated with particular emphasis placed on the applicant's training in qualitative, quantitative, organic and biological chemistry; mathematics; botany; zoology; and physics.

Master's Degree

All students receiving advanced degrees in bacteriology are required to have completed the following courses or equivalents: Bacteriology 331, 501, 511, 531, 551; one year of inorganic college chemistry; one year of organic chemistry; one semester of quantitative analysis; one year of biochemistry; one year of college physics; and Mathematics 111.

Doctor of Philosophy Degree

Prior to selection of a dissertation subject and assignment to a research adviser, the student must pass a written qualifying examination in the following areas: (a) general microbiology, (b) pathogenic microbiology, (c) immunology, (d) virology, (e) bacterial physiology, and (f) bacterial genetics. This examination will normally be given after one year of graduate study or in case the student has received the master's degree, at the beginning of work

for the Ph.D. degree. After satisfactory completion of the qualifying examination, the student will be assigned a permanent advisory committee, the chairman of which will be his major research adviser.

A comprehensive oral examination will be taken not earlier than one year after completion of the qualifying examination. Prior to admission to the comprehensive examination the student must have satisfactorily completed the language requirements and courses in differential and integral calculus and physical chemistry.

Graduate Courses

501. **Pathogenic Microbiology.** (5:3:6). S. Prerequisite: Bacteriology 331 or consent of instructor. Larsen
A study of the characteristics of pathogenic bacteria, viruses, rickettsia, yeasts, and molds.
511. **Immunology.** (4:2:6) F. Prerequisite: Bacteriology 501 or consent of instructor. Donaldson
Theories of immunity; training in serological methods.
521. ***Industrial Microbiology.** (2:2:0) F. (Offered 1964-1965). Prerequisites: Bacteriology 331 and biochemistry. Larsen
The role of microorganisms in the production of such products as acids, alcohols, antibiotics, vitamins, and enzymes.
522. ***Industrial Microbiology Laboratory.** (1:0:3) F. (Offered 1964-65). Prerequisite: Completion of or concurrent registration in Bacteriology 521. Larsen
531. **Virology.** (2:2:0) S. Prerequisite: Bacteriology 501. R. Sagers
Characteristics of viruses and virus diseases.
532. **Virology Laboratory.** (2:0:6) S. Prerequisite: Completion of or concurrent registration in Bacteriology 531. R. Sagers
541. ***Cultivation and Nutrition of Bacteria.** (2:0:6) F. (Offered 1963-64) Prerequisite: Bacteriology 331. R. Sagers
A laboratory study of selective enrichment techniques, fundamental nutritional requirements, and growth properties of the major taxonomic groups of bacteria.
551. **Advanced Microbiology.** (3:3:0) S. Prerequisite: Bacteriology 331. Beck
552. **Advanced Microbiology Laboratory.** (1-2:0:3-6) S. Prerequisite: Completion of or concurrent registration in Bacteriology 551. Beck, Bradshaw
561. ***Radioactive Tracer Techniques in Biology.** (2:0:6) F. (Offered 1964-65) Prerequisite: consent of instructor. Beck
581. ***History of Bacteriology.** (1:1:0) F. (Offered 1963-64). Prerequisite: senior or graduate status. Larsen
611. ***Advanced Immunology.** (2:2:0) S. (Offered 1964-65). Prerequisite: Bacteriology 511. Donaldson
651. **Special Topics in Bacterial Metabolism.** (2:2:0) F. Prerequisite: Bacteriology 552. Beck, Bradshaw, R. Sagers
661. ***Bacterial Genetics.** (2:2:0) F. (Offered 1963-64). Prerequisites: Bacteriology 331, a course in general genetics, and Chemistry 582 or equivalent. Bradshaw
A study of genetic processes in bacteria and viruses, with special emphasis on recombination, transduction, mutation, replication mechanisms, and related topics.
662. ***Bacterial Genetics Laboratory.** (1:0:3) F. (Offered 1963-64). Prerequisite: Completion of or concurrent registration in Bacteriology 661. Bradshaw
691. **Graduate Seminar.** (1:1:0) F.S. Staff

695. Research to Furnish Data for Thesis. (1-10:Arr.:Arr.)	F.S.	Staff
699. Thesis for Master's Degree. (1-4:Arr.:Arr.)	F.S.	Staff
795. Doctoral Candidate Research. (Arr.)	F.S.	Staff
799. Dissertation for the Ph.D. Degree. (Arr.)	F.S.	Staff

This course also counts in bacteriology:

Agronomy 614. Advanced Soil Microbiology. (3:2:3)

*Offered alternate years only.

Botany

Professors: Christensen, Harrison (chairman, 232 B), McKnight.

Associate Professors: Moore, Murdock, Stutz, Welsh.

Assistant Professor: Hess.

Collaborators: Odell Julander, William A. Laycock.

Requirements

A student working toward a graduate degree in botany should have a basic understanding of general botany, taxonomy, genetics, morphology, physiology, and ecology. It is assumed that he will also have training in mathematics, chemistry, physics, bacteriology, soils, and zoology adequate for advanced study in the area of his specialization. Where deficiencies exist provision will be made for correcting them.

An advisory examination is required of all candidates for graduate degrees. The examination is to provide a means for evaluation of the student's preparation in the major fields of botany. This examination should be completed by the end of the first full semester of graduate study.

Master's Degree

The requirements for the master's degree in botany are those listed above and the general requirements of the Graduate School. The Master of Science degree is offered in Botany.

Doctor of Philosophy Degree

In addition to the general Graduate School requirements for the Doctor of Philosophy degree, students in the Department of Botany will be required to satisfy the following special requirements:

One major area of specialization within the department is required. One minor area of specialization within the department, consisting of at least 15 semester hours, and one minor sequence outside the department, consisting of at least 15 hours, are required.

Students will be required, normally, to complete a master's degree before undertaking the doctorate program.

The comprehensive examination may be taken after at least one full year of graduate study and after the language examinations have been passed. It will be an oral examination and will explore thoroughly the student's background in the major areas of botany, including basic undergraduate work when this seems desirable.

The student will conduct original research that makes a contribution to knowledge, and present a satisfactory dissertation.

Graduate Courses

501. **Histological Techniques.** (2:0:6) F. Prerequisites: Botany 101 or Zoology 105, and Botany 201. Staff

- 510. Advanced Taxonomy.** (3:1:6) S.Su. Prerequisites: Botany 110 and 176 or consent of instructor. Welsh
- 525. General Cytology.** (3:2:3) F. Prerequisite: Botany 101 or Zoology 105. Moore, Stutz
The structure of the cell and its organelles. In addition, the role of cell organelles in cell physiology is studied.
- 550. Plant Geography.** (3:2:3) F. (Offered alternate years) Staff
Plant distribution and the origin of plant communities in the light of present and recent geological conditions.
- 561. Watershed Management.** (2:2:0) S. (Field trips to be arranged) Murdock
- 591. Seminar.** (1:1:0) F. Staff
- 598. Special Problems.** (1-3:0:3-9) F.S. Staff
- 615. Agrostology: Taxonomy and Ecology of Grasses.** (2:1:5) F. Prerequisite: Botany 110; recommended: Botany 176. Harrison
Classification and ecology of grasses. Important forage species are emphasized.
- 630. Angiosperm Morphology.** (4:3:3) F. (Offered alternate years) Prerequisite: Botany 105 or 331. Moore
A detailed study of the flowering plants with emphasis on the structural relationships.
- 634. Morphogenesis.** (3:2:3) F. Recommended: training in the following areas: taxonomy, anatomy, and physiology or biochemistry. Moore
The problem of development of form in organisms, with emphasis on plants.
- 635. Advanced Mycology.** (4:2:6) S. Prerequisites: Botany 101 or Zoology 105, and Botany 335. McKnight
- 638. Fleshy Fungi.** (2:1:3) Su. Prerequisite: a laboratory course in bacteriology, botany, or zoology. McKnight
- 639. Paleobotany.** (3:2:3) S. Prerequisite: Botany 101 or 105. Staff
- 641. Physiology of Fungi and Algae.** (4:3:3) F. (Offered alternate years) Prerequisites: Botany 335, 440. Staff
- 655. Field Ecology.** (1-3:Arr.:Arr.) S.Su. (Extended field trip) Prerequisite: consent of instructor. Christensen, Murdock
Ecological field work in forests and rangelands.
- 676. Cytogenetics.** (3:3:0) F. Prerequisite: Botany 525. Stutz
- 678. Speciation.** (3:3:0) S. Prerequisite: genetics or consent of instructor. Stutz
- 697, 698. Special Problems.** (1-3:0:3-9) F.S. Staff
- 699. Thesis for Master's Degree.** (1-6:0:3-12) F.S. Staff
- 740. Advanced Plant Psychology I.** (3:2:3) S. Prerequisite: Botany 440. Harrison
- 741. Advanced Plant Physiology II.** (3-4:2-3:3) F. Prerequisite: Botany 440. Harrison
- 742. Plant Nutrition and Growth.** (3:2:3) F. Prerequisites: Botany 440, Chemistry 111, 112; recommended: organic chemistry. Harrison
- 750. Grassland and Desert Ecology.** (3:3:0) S. Prerequisite: consent of instructor. Christensen, Murdock
- 752. Forest Ecology.** (3:3:0) F. Prerequisite: consent of instructor. Christensen, Murdock

- 760. Conservation of Natural Resources.** (1-3:1-3:0-3) F. Prerequisite: consent of instructor. Christensen, Murdock
- 776. Population Genetics.** (3:3:0) S. Prerequisite: Botany 176 or Botany 376 or Zoology 376. Stutz
- 795. Research for Doctoral Degree.** (2-4:0:6-12) F.S. Staff
- 799. Doctoral Dissertation.** (Arr.) F.S. Staff

Business Education and Office Management

Professors: Christensen, Peterson.

Associate Professors: Bell (chairman, 351 JKB), Crandall, Croft, Polson.

Admission

To be admitted to full degree-seeking status, a student must have received the baccalaureate degree with a major in business teacher education. He must also have satisfied established state requirements for a certificate to teach business subjects in the public schools.

Entrance into the program is subject to approval by a departmental graduate committee. A prospective graduate major is required to obtain departmental approval of his program before registering.

Requirements

Upon achieving degree-seeking status, the student will be assigned by the director of the department's graduate program to an advisory committee. It will be the committee's task to assist the student in identifying an appropriate program of studies leading to the master's degree.

The student will be recommended for the master's degree in business education when the following minimum requirements have been satisfied.

1. Successful completion of 30 hours of approved graduate study as follows:

business education	15 hours
minor field (must be in the College of Business)	9 hours
electives (including thesis)	6 hours
Total	30 hours
2. Presentation in final form of an acceptable research project.
3. Satisfactory defense of research project and evidence of adequate professional preparation by means of an oral examination.

Graduate Courses

- 570. Cooperative Business Experience Internship.** (4:4:4) F.S.Su. Staff
Through cooperation of business and industry, this work-education program is open to the following qualifying majors: office management, executive assistant, and business teacher.
- 590. Seminar.** (2:2:0) F.S.Su. Staff
- 615. Methods of Instruction in Business Education: Typewriting and Shorthand.** (2:2:0) F.Su. Staff
A critical evaluation of classroom methods, psychology of learning, and findings of research pertaining to improvement of instruction in typewriting, shorthand, and related subjects.
- 620. Methods of Instruction in Business Education: Bookkeeping and Economic Education.** (2:2:0) F.Su. Staff
An analysis of course content, classroom methods, and teaching materials pertaining to improvement of instruction in bookkeeping and economic education.

- 630. Current Developments Influencing the Content of Business Education.** (2:2:0) F. Staff
A presentation of recent technological developments, such as automation in business, and an analysis of the content and procedures of business education.
- 635. Analysis of Recent Research in Business Education.** (2:2:0) S. Staff
Investigation of recent developments in materials and methods in the teaching of business subjects in the secondary school and junior college. Open to those who have had teaching experience.
- 640. Trends of Thought in Business Education.** (2:2:0) S. Staff
Fundamental ideas that have shaped the business curriculum in the United States and basic issues that have affected purposes, trends, and control of business education in public and private institutions.
- 665. Practicum in Business Education.** (2:2:0) F.Su. Staff
The planning and development of practical and creative projects in the field of business education, individually or in groups. Experienced teachers are permitted to use actual school problems and projects.
- 675, 676. Business Education Workshop.** (2:2:0 ea.) Su. Staff
A series of clinics in selected business subjects.
- 694. Independent Readings.** (1-4:1-4:0) F.S.Su. Staff
- 698. Field Project for Master's Degree.** (1-4:1-4:0) F.S.Su. Staff
- 699. Thesis for Master's Degree.** (1-6:Arr.:Arr.) F.S.Su. Staff

The following courses are applicable in business education and office management:

Accounting 555. Advanced Data Processing. (3:3:0) S.

Business Management 420. Human Relations in Administration I. (3:3:0) F.S.

Business Management 480, 481. Executive Lectures. (1:1:0) S.

Business Management

Professors: Christensen, Oaks, R. Smith, W. Taylor.

Associate Professors: Clark, Johnson, McKay (MBA director, 370 JKB), Mangum, Nielson, Orton, Sessions (chairman, 395 JKB).

MASTER OF BUSINESS ADMINISTRATION PROGRAM

Academically, the MBA program is inter-disciplinary in nature, and the MBA faculty is drawn from departments throughout the University.

The MBA program is a full two-year integrated experience which develops professional competence and maturity in the following areas: administration, operations, quantitative analysis, environment, and communication and research. The objective of the program is to qualify students for responsibility and creative leadership in an increasingly complex and dynamic business society. It is anticipated that the student work-load in the program will average 60 to 72 hours per week, and the first-year students are discouraged from taking outside employment. Financial assistance is available to those who qualify. Students may enter the program only in September each year.

Admission

Applicants with a bachelor's degree will be considered regardless of their undergraduate major. Those holding degrees in fields other than business are particularly urged to apply. Admission is based on an evaluation of a completed

application, three references, college transcripts, E.T.S. test results and, if practical, personal interviews. Evidence of future administrative capability is considered as well as past performance. The closing date for applications is May 1, except by special petition. Detailed information concerning the admissions procedure may be secured from the MBA Program, Graduate School, Brigham Young University, Provo, Utah.

Placement

A special placement program is being organized to assist students in beginning and developing their careers.

Preparation

Students contemplating an MBA degree are advised to take a broad program in their undergraduate work and to confer with members of the MBA faculty. Students with an undergraduate major in business management will be accepted in the MBA program only by special permission.

Graduate Courses

- 601. **Administration I and II.** (6:3:0) F.S. Prerequisite: admission to the MBA program. Staff
- 605. **Administration III.** (3:3:0) F. Prerequisite: Business Management 601. Staff
- 607. **Administration IV.** (3:3:0) S. Prerequisite: Business Management 605. Staff
- 611. **Operations I and II.** (12:6:0) F.S. Prerequisite: admission to the MBA program. Staff
- 615. **Operations III.** (3:3:0) F. Prerequisite: Business Management 611. Staff
- 617. **Operations IV.** (3:3:0) S. Prerequisite: Business Management 615. Staff
- 621. **Quantitative Analysis I and II.** (12:6:0) F.S. Prerequisite: admission to the MBA program. Staff
- 625. **Quantitative Analysis III.** (3:3:0) F. Prerequisite: Business Management 621. Staff
- 627. **Quantitative Analysis IV.** (3:3:0) S. Prerequisite: Business Management 625. Staff
- 631. **Environment I and II.** (6:3:0) F.S. Prerequisite: admission to the MBA program. Staff
- 635. **Environment III.** (3:3:0) F. Prerequisite: Business Management 631. Staff
- 637. **Environment IV.** (3:3:0) S. Prerequisite: Business Management 635. Staff
- 641. **Communication and Research I and II.** (4:Arr.:Arr.) F.S. Prerequisite: admission to the MBA program. Staff
- 645. **Communication and Research III.** (3:Arr.:Arr.) Prerequisite: Business Management 641. Staff
- 647. **Communication and Research IV.** (3:Arr.:Arr.) Prerequisite: Business Management 645. Staff

MASTER OF SCIENCE AND MASTER OF ARTS DEGREES

Applications are no longer accepted for the Master of Science and Master of Arts degrees. Graduate students who are working toward the degree of Master of Science or Arts will continue on with their programs. A minor will still be offered in the fields of business management, finance and banking, marketing, industrial management, and industrial relations and personnel management for

students majoring in other fields provided the student has taken or is willing to take the necessary prerequisites to provide an adequate foundation for his proposed graduate minor in this department.

Graduate Courses

- 521. Human Relations in Administration II.** (3:3:0) S. Prerequisite: Business Management 420 or consent of instructor. Staff
An illuminating conceptual framework for understanding group processes is developed to identify factors contributing to understanding, growth, and cooperation in group work and leadership.
- 552. Advanced Corporation Finance.** (3:3:0) F.S. Prerequisite: Business Management 348 or consent of instructor. Staff
Financial problems connected with organization of corporations, underwriting, and sale of securities; management, expansion, and organization of corporations that are not successful.
- 555. Problems in Advertising.** (3:3:0) S. Prerequisite: Business Management 455 or consent of instructor. Staff
Problems in the use of advertising as part of management's overall marketing strategy. Stresses planning, coordination, control, and evaluation of effectiveness.
- 556. Problems in Retail Store Management.** (3:3:0) S. Prerequisite: Business Management 456 or consent of instructor. Staff
Problems involved in policy formulation and implementation and in the coordination of store activities through the use of controls and standards.
- 557. Problems in Sales Management.** (3:3:0) F.S. Prerequisite: Business Management 347 or consent of instructor. Staff
Problems in sales methods, sales organization, management of sales force (selection, training, compensation, and supervision), and sales planning and control.
- 558. Marketing Research.** (3:3:0) F.S. Prerequisites: Business Management 347 and senior standing. Staff
Uses, methods, and techniques of marketing research.
- 559. Advanced Problems in Marketing Research.** (1-3:Arr.:Arr.) F.S. Prerequisites: Business Management 558 and consent of instructor. Staff
Advanced methods of research and their application to marketing problems.
- 561. Problems in Production—Manufacturing Processes.** (5:4:2) F. Prerequisites: Business Management 340, Drawing 110, and senior or graduate standing in the department. Other by approval of instructor. Staff
Part one of a one-year course dealing with problems encountered by production personnel. Considers (1) the materials and manufacturing processes commonly used in industry; and (2) Process analysis as applied to work simplification and plant layout. Utilizes business cases, films, and field trips.
- 562. Problems in Production—Manpower Management and Production Control.** (5:6:0) S. Prerequisite: Business Management 561. Staff
Part two of a one-year series. Deals with time study, job evaluation, wage administration, manpower planning, and production control.
- 565. Life Insurance.** (2:2:0) S. Prerequisite: Business Management 450 or consent of instructor. Staff
Advanced study of the nature and functions of life insurance and its application to personal and business needs.
- 566. Property and Casualty Insurance.** (2:2:0) S. Prerequisite: Business Management 450 or consent of instructor. Staff
Advanced study of the functions of fire and marine insurance, casualty insurance, and corporate building.

- 567. Real Estate Administration.** (2:2:0) S. Prerequisite: Economics 454 or consent of instructor. Staff
Mechanisms of real estate finance, principles of mortgage risk analysis, role of government agencies, and problems of property development.
- 569. Personnel Management.** (3:3:0) S. Prerequisites: Economics 345 and Business Management 420, or permission of instructor. Staff
Management of the personnel function: job evaluation, organization planning, employee selection, training, compensation, morale, labor relations, and management development. Method case analysis and research projects.
- 571. Management of Financial Institutions.** (3:3:0) S. Staff
Asset management of various types of financial institutions with special emphasis on loan policies and related problems.
- 574. Investment Management.** (3:3:0) S. Prerequisite: Business Management 451. Staff
Theory of investment management and its application in formulation of investment policies for different types of investors.
- 575. Advanced Production Methods.** (2:2:0) S. (Offered 1964-65). Prerequisite: Business Management 561. Staff
Advanced methods work, automation, and the application of data processing to industrial operations.
- 576. Industrial Planning and Forecasting.** (2:2:0) S. (Offered 1964-65). Prerequisite: Business Management 488. Staff
Top management policy determination in the areas of production planning, planning of physical facilities, and organization planning as they are related to market and economic forecasts.
- 577. Business Enterprise and Moral Responsibility.** (2:2:0) F.S. (Offered 1964-65). Prerequisite: senior standing. Staff
A case course in decision making in areas involving conflicts of interest which necessitate reconciling economic objectives and fundamental goals of business.
- 579. Problems in Marketing.** (3:3:0) F.S. (Offered 1964-65). Prerequisites: Accounting 211 and Statistics 221 or consent of instructor. Staff
Analysis of problems in marketing management with particular emphasis on integrating the various functional areas.
- 585. Industry Analysis.** (3:3:0) F.S. (Offered 1964-65). Prerequisites: Accounting 201, 202, and Statistics 221 or consent of instructor. Staff
Production characteristics of major industries. Large business units are studied in terms of sources of raw materials, production techniques, financial structure, degree of integration, stage of maturity, character of mechanization, government regulation, and possible future development.
- 589. Business Policy.** (3:3:0) F.S. Prerequisite: senior standing in the Department of Business Management. Staff
Cases involving determination of long range objectives in the business firm; the development of sound and consistent policies for achieving these objectives.
- 591. Research and Diagnosis of Business Problems.** (1-2:Arr.:Arr.) F.S. (Offered 1964-65). Prerequisite: completion of or concurrent registration in Business Management 589. Staff
Provides experience in the research and diagnosis phase of case method. Includes preparation of cases from actual business situations.
- 699. Thesis for Master of Science or Master of Arts Degree.** (1-6:Arr.:Arr.) F.S. Staff

These courses also count in business management:

Accounting 556. Electronic Computer Programming. (3:3:1)

Journalism 561. Public Relations. (3:3:0)

Chemical Engineering Science

Professors: Barker (chairman, 176 ELB), Pope.

Associate Professor: Christensen.

Assistant Professor: Smoot.

The Department of Chemical Engineering Science offers the Master of Science degree with research in such fields as mass transfer, solvent extraction, fluid dynamics, heat transfer, thermodynamics, process control, applied mathematics, high pressure, and materials.

Requirements

A student working toward a graduate degree in chemical engineering should have completed a bachelor's degree or its equivalent from an accredited engineering school. Students without such training are required to complete basic chemical engineering courses before proceeding with a graduate program.

In addition to the general Graduate School entrance requirements, a student may be required to successfully complete a departmental entrance examination before he is accepted as a candidate for the master's degree.

The student should normally choose a research project prior to or at the beginning of his first semester of residence at the University.

Graduate Courses

- 578. Chemical Engineering Kinetics.** (3:3:0) F. Christensen
Theories and applications of chemical kinetics in catalytic and non-catalytic reacting systems.
- 579. Process Dynamics and Unit Processes.** (3:3:0) S. Barker
A fundamental study of the measurement and control of process variables. The characteristics of processes, controllers, measuring elements, and the application of closed loop techniques.
- 671. Advanced Heat Transfer.** (2:2:0) F. Barker, Christensen
An advanced treatment of the transfer of heat with emphasis on applications of engineering interest.
- 672. Advanced Fluid Flow.** (2:2:0) F. Pope, Barker, Christensen
An advanced treatment of the flow of fluids with emphasis on application of engineering interest.
- 673. Advanced Transport Phenomena.** (3:3:0) F. Smoot
Derivation and application of the general differential equations for transport of momentum, heat, and mass. Methods of estimating transport coefficients. Application of kinetic theory to transport mechanisms.
- 674. Advanced Thermodynamics.** (2:2:0) S. Christensen
Advanced applications of thermodynamics to chemical engineering problems. Estimation and correlation of thermodynamics properties; chemical equilibrium and introduction to statistical thermodynamics.
- 675. Separations Processes.** (3:2:3) Arr. Pope, Smoot
Absorption and extraction; interphasial mass transfer, multi-component systems, simultaneous absorption, and chemical reaction; design of equipment.
- 676. Seminar.** (0:1:0) F.S. Staff
Discussion of advanced topics including the plans and results of the master's thesis.
- 681. Kinetics and Catalysis.** (2:2:0) Arr. Christensen
Application of fundamental theories of reaction kinetics, diffusion, and absorption to catalytic reacting systems.

- 682. Nuclear Engineering.** (2:2:0) Arr. Barker
Reactor design including reactor physics, heat transfer, engineering materials, instrumentation, and control.
- 683. Advanced Plant Design.** (2:2:0) Arr. Pope
Comprehensive design of a chemical plant including feasibility and market surveys, economic evaluation, raw materials, plant layout, design, instrumentation, materials of construction.
- 684. Advanced Process Dynamics and Control.** (2:1:3) Arr. Barker
Dynamics of chemical processes, the measurement of process variables, and the control of processes using feed-back control.
- 685. Chemical Engineering Analysis.** (2:2:0) Arr. Smoot
Mathematical analysis of selected topics in unit operations and unit processes.
- 686. Distillation.** (2:2:0) Arr. Pope
Binary and multicomponent distillation, prediction of equilibrium relationships, extractive and azeotropic distillation, application of computers to complex distillation column design; instrumentation.
- 687. Chemical Engineering Economics.** (2:2:0) Arr. Pope
An investigation into the basic economic principles which govern the operations of the chemical industry.
- 688. Special Problems.** (Arr.) Arr. Staff
Investigation of problems of special interest in the field of chemical engineering.
- 697. Research.** (Arr.) F.S.Su. Staff
- 699. Thesis for Master's Degree.** (Arr.) F.S.Su. Staff

Chemistry

Professors: Anderson, Blackham, Broadbent, Bryner (chairman, 225 ESC), Goates, Gubler, Hall, Nelson, Nicholes, Swensen.

Special Professor: Vernon.

Associate Professors: Butler, Izatt, Peterson, Snow.

Assistant Professors: Cluff, Hawkins, Ott, White.

Supt. of Laboratories and Stores: Meibos.

Fields

1. Analytical—physical chemistry, 2. Biochemistry, 3. Inorganic chemistry, 4. Organic chemistry, 5. Physical chemistry, 6. Basic chemistry minor.

Requirements

It is expected that the graduate student will meet all the general requirements for advanced degrees as outlined by the Graduate School. The initiative for meeting these requirements rests with the student. Special requirements of the Department of Chemistry are given below. The objectives of the department in the selection and training of candidates for advanced degrees are first, to assure adequate depth and breadth of knowledge; and second, to discover and develop ability to do independent and productive scientific research. The student's record in undergraduate courses will be accepted as partial evidence of the breadth of his knowledge. He will be expected to extend and broaden this knowledge by taking or auditing advanced courses selected with the approval of his advisory committee.

It is expected that during the first semester of graduate work, the student will choose an advisory committee whose function will be to guide him throughout the course of his graduate study. It is the desire of the department that the student choose the chairman of his committee after individual consultation with at least five members of the Department of Chemistry staff who represent three or more fields of chemistry and who are presently active in research. These faculty consultations are to be recorded on a special form obtained from the department office. After these consultations are completed the student will select his major professor and inform the department chairman of his choice. The department chairman and the student will confer with the professor and ask for his agreement to serve as chairman of the student's advisory committee. The other committeemen will then be chosen by mutual consent of the student and his major professor.

The Department of Chemistry relies on its best graduate students for important assignments in laboratory and recitation instruction in the larger undergraduate courses. It also considers such experience a necessary and integral part of graduate training. The department has followed the policy of most major universities by including a teaching experience as a part of the graduation requirements. Unless excused by advisory committee recommendation and staff approval, for reasons beyond the student's control, he will be expected to teach a cumulative total of at least two semesters at 20 hours per week during his residency toward the doctor's degree, half of which must come after his first year in residency. Master's degree candidates must teach half this amount.

Master's Degree

In addition to the general Graduate School requirements, a student must successfully complete a departmental entrance examination before he will be accepted as a candidate for the master's degree. Each candidate for the master's degree will be required to pass a reading test or present a year's credit in French, German, or Russian.

The department, in cooperation with the Graduate Department of Education, offers the three-year Master's Degree Program (MA-3), wherein the student wishing to prepare for high school or junior college teaching may obtain the master's degree in education with a major in chemistry. This program will normally begin at the end of the student's sophomore year or anytime thereafter. Details may be obtained from the chairman of the Department of Chemistry or the Graduate Department of Education.

Doctor of Philosophy Degree

Requirements for a Doctor of Philosophy degree in a field of chemistry include satisfactory completion of the following:

1. A written appraisal examination to determine if the student is adequately prepared to enter immediately upon his graduate program.
2. A major consisting of the following courses required of all students: Chemistry 503, 504, and 601 plus an additional 11 hours minimum chosen from the major area by the student and his advisory committee.
3. A first minor in basic chemistry consisting of three of the following basic courses not in the student's major area: Chemistry 514, 580, 621, 551 or 652, 661.
4. A second minor consisting of course work and study satisfactory to the student's advisory committee, both in quality and quantity.
5. An evaluation by the chemistry faculty of the student's academic performance will be made at the end of the semester in which the 16th hour of graduate credit is obtained. It will then be recommended that he (1) be allowed to proceed with his Ph.D. program, (2) be allowed to enroll in a master's program, or (3) be denied permission to remain enrolled as a degree-seeking student in the Department of Chemistry.
6. A comprehensive examination consisting of written examinations in the major and second minor fields and an oral proposition examination. The

comprehensive examination may not be taken before the student's academic performance has been evaluated (item 5), but must be taken at least one year prior to the granting of the degree. All parts of the comprehensive examination must be completed within a period of three weeks.

7. Admission to candidacy after (1) completing two years of graduate study, (2) passing language examinations, (3) passing comprehensive examination, and (4) obtaining approval of subject for dissertation.
8. A dissertation prepared under the direction of the candidate's advisory committee in which he reports and interprets the results of his research.
9. A final oral examination devoted primarily to the dissertation.

Graduate Courses

500. **History of Chemistry.** (2:2:0) S. Nicholes
503. **Research Laboratory Techniques.** (1:0:3) F. Staff
504. **Instrumental Analysis.** (2:1:3) F.S. Prerequisite: Chemistry 461, 464. Ott
514. **Inorganic Chemistry.** (3:3:0) S. Prerequisite: Chemistry 221 or 321 and Chemistry 351. Izatt
518. **Inorganic Syntheses.** (2:0:6) (Offered 1963-64 and alternate years) Izatt
524. **Quantitative Microanalysis.** (2:1:3) S. (Offered 1962-63 and alternate years) Staff
551. **Qualitative Organic Analysis.** (2-3:1:3-6) F. Blackham, Broadbent
Systematic identification of organic compounds singly and in mixtures.
580. **Metabolic Processes.** (2:2:0) S. Prerequisites: Chemistry 352 and 461. Swensen
For non-biochemistry majors only. Provides an insight into the important area of biochemistry for those who will not otherwise contact it.
- 581, 582. **Biochemistry.** (3:3:0 ea.) F.S. Prerequisites: Chemistry 321 or 221, and 352 and 355. White
- 584, 585. **Biochemistry Laboratory.** (2:0:6 ea.) F.S. Prerequisites: completion of or concurrent registration in Chemistry 581, 582, respectively. White
591. **Chemical Literature and Technical Writing.** (1:1:0 ea.) F. Broadbent, Nelson
- 594, 595. **General Seminar.** (0:1:0) Required of all first year graduate students in Chemistry. Staff
598. **Special Problems.** (Arr.) Arr. Staff
Registration by permission.
601. **Geometry of Atoms and Molecules.** (3:3:0) F. Blackham, Broadbent, Hawkins, Nelson
612. **Chemistry of the Non-Metals.** (2:2:0) F. (Offered 1964-65 and alternate years). Cluff
613. **Chemistry of the Metals.** (2:2:0) F. (Offered 1963-64 and alternate years) Cluff
621. **Advanced Analytical Chemistry.** (2:2:0) S. Butler
652. **Advanced Organic Chemistry.** (3:3:0) S. Blackham, Broadbent, Hawkins, Nelson
658. **Organic Syntheses.** (3:1:6) F. Blackham, Broadbent, Hawkins, Nelson
661. **Chemical Thermodynamics.** (3:3:0) F. Goates

662. Chemical Thermodynamics. (2:2:0) S.	Goates
663. Reaction Kinetics. (2:2:0) S.	Anderson
681, 682. Biochemistry of Carbohydrates, Lipids and Proteins. (3:3:0 ea.) F.S. (Offered 1964-65 and alternate years)	Gubler
694, 695. General Seminar. (0:1:0) F.S.	Staff
697. Master's Candidate Research. (Arr.) Arr.	Staff
699. Thesis for Master's Degree. (Arr.) Arr.	Staff
711. Coordination Compounds. (2:2:0) F. (Offered 1964-65 and alternate years)	Izatt
719. Selected Topics in Inorganic Chemistry. (1-3:1-3:0) Arr.	Staff
725. Electro-analytical Chemistry. (3:3:0) F. (Offered 1964-65 and alternate years)	Butler
729. Selected Topics in Analytical Chemistry. (1-3:1-3:0) Arr.	Staff
751. Mechanisms of Organic Reactions. (3:3:0) F.	Nelson
757. Chemistry of Natural Products. (3:3:0) S. (Offered 1963-64 and alternate years)	Broadbent
758. Heterocyclic Compounds. (3:3:0) S. (Offered 1964-65 and alternate years)	Broadbent
759. Selected Topics in Organic Chemistry. (1-3:1-3:0) Arr.	Staff
761, 762. Statistical Mechanics. (3:3:0 ea.) F.S. (Offered 1964-65 and alternate years)	Snow
764. Nuclear and Radiochemistry. (3:2:2) S. (Offered 1963-64 and alternate years)	Anderson
765, 766. Quantum Chemistry. (3:3:0 ea.) F.S. (Offered 1963-64 and alternate years)	Snow
769. Selected Topics in Physical Chemistry. (1-3:1-3:0) Arr.	Staff
781. Enzyme Chemistry. (2-3:2:0-3) F. (Offered 1963-64 and alternate years)	White
782. Biological Oxidation. (2:2:0) S. (Offered 1963-64 and alternate years)	White
794, 795. General Seminar. (0:1:0) F.S.	Staff
797. Doctoral Candidate Research. (Arr.) Arr.	Staff
799. Dissertation for the Ph.D. Degree. (Arr.) Arr.	Staff

Civil Engineering Science

Professors: Barton (chairman, 198 ELB), Enke, Firmage, Fuhrman, Rollins.

The Department of Civil Engineering Science offers the master's degree in the areas of structures, hydraulics, engineering mechanics, soil mechanics, and materials.

A student working toward the graduate degree in civil engineering should have completed a bachelor's degree or its equivalent in civil engineering. Students without such training are required to complete basic civil engineering courses before proceeding with a graduate program.

All students working toward a graduate degree in civil engineering are expected to complete a minimum of 6 semester hours of approved mathematics credit beyond a course in ordinary differential equations. Such courses must be a part of the master's degree program if they were not completed in the undergraduate program.

In addition to the general Graduate School requirements, a student may be required to successfully complete a departmental entrance examination before he is accepted as a candidate for the master's degree.

Graduate Courses

- 501. Advanced Mechanics of Materials I.** (3:3:0) Arr. Prerequisite: C.E. 303. Staff

Introduction to theories of elasticity, plasticity, and strain energy methods; stresses and strains in beams, curved members, rotating discs, thick cylinders, and torsion and structural members.

- 503. Applied Elasticity.** (3:3:0) Arr. Prerequisites: C.E. 303; Math 313, 334. Staff

Analysis of stress and strain in two dimensions; equation of equilibrium and compatibility; problems in elasticity; emphasis on applications to machine and structural design.

- 507. Experimental Stress Analysis I.** (3:2:3) Arr. Prerequisite C.E. 303. Staff

Principles and techniques of the experimental methods of stress determination and their application to static engineering problems; includes mechanical and optical gages, and brittle lacquers; emphasizes electric strain gages, calibration and instrumentation; introduces photoelasticity and photostress techniques.

- 526. Advanced Structural Theory.** (3:2:3) Arr. Prerequisites: C.E. 422, 424. Staff

Continued analytical methods in structural mechanics and iterative processes. Solutions of complex structural types; arches; secondary stress.

- 531. Advanced Hydraulic Design.** (3:2:3) Arr. Prerequisites: C.E. 424, 431, and 432. Staff

Planning and basic design of hydro-electric flood control, irrigation, and multi-purpose projects involving the utilization of water resources; consideration of hydraulic and hydrologic design elements.

- 543. Physico-Chemical Characteristics of Soils.** (3:3:0) Arr. Prerequisites: Chemistry 106; C.E. 441.

Physico-chemical relationships in soils, including the structures of clay minerals, properties of the electrical double layer, ion exchange phenomena, and equilibria.

- 601. Advanced Properties of Materials.** (3:3:0) Arr. Prerequisite: C.E. 401 or equivalent. Staff

Structure of metals and behavior of materials under various conditions of loading and use; relation of mechanical properties to behavior and their significance; tests and interpretation of test data.

- 603. Theory of Elasticity.** (3:3:0) Arr. Prerequisites: Math 334 and 336 or equivalent. Staff

The mathematical theory of elasticity; analysis of stress and strain; generalized Hooke's law; uniqueness theorem, special topics in elasticity.

- 621. Thin Shell Structures.** (3:3:0) Arr. Prerequisites: C.E. 424, 525 Staff
Theory and design methods related to domes, arches, folded plate, and hyper structures.
- 622. Bridge Design.** (3:3:0) Arr. Prerequisites: C.E. 423, 424, 525. Staff
Design of statically indeterminate bridge structures including composite continuous beams and continuous trusses. Design of piers and abutments. AASHTO bridge design specifications.
- 623. Pre-Stressed Concrete.** (3:3:0) Arr. Prerequisite C.E. 424. Staff
Basic theory, pre-stress and post-stress methods. Details of design and fabrication. Applications to continuous structures.
- 625. Structural Design of Multi-Story Applications.** (3:3:0) Arr. Prerequisites: C.E. 423, 424, 525. Staff
Design loadings and specifications, analysis and design of statically indeterminate structural frames of steel and concrete. Elastic and plastic approaches to design.
- 632. Advanced Hydrology.** (3:3:0) Arr. Prerequisites: C.E. 431, 432 or equivalent. Staff
Theory and application of advanced hydrologic principles to engineering design and investigations.
- 633. Hydraulic Design of Water Control Structures.** (3:3:0) Arr. Prerequisites: C.E. 432, 531. Staff
Hydraulic and structural design of concrete dams and appurtenants works operational procedures.
- 641. Advanced Soil Mechanics.** (3:3:0) Arr. Prerequisites: C.E. 441, 542 or equivalent. Staff
Advanced topics in soil mechanics including stress distribution in earth masses, the shearing strength of soils, consolidation theory, settlement analysis, stability of slopes, and the bearing capacity of soils.
- 642. Advanced Soil Mechanics Laboratory.** (2:0:6) Arr. Prerequisites: C.E. 441, 542, or equivalent. Rollins
An advanced study in the techniques of laboratory investigations of soils.
- 643. Earth and Rock Fill Structures.** (3:3:0) Prerequisite: C.E. 542 or equivalent. Staff
Aspects associated with the design and construction with earth and rock fill dams including geological study and erection of damsites, location and selection of materials, seepage and pore pressure studies, interpretation and application of shearing strength data, stability analysis and the construction controls.
- 644. Advanced Foundation Engineering.** (3:3:0) Arr. Prerequisite: C.E. 641. Staff
An applied course in foundation engineering including techniques of sub-surface investigation, determination of the allowable soil pressures for footings and the design of spread footings, raft foundation, and pile foundation for structures on clays, silts, and sand.
- 645. Structural Foundations.** (2:2:0) Prerequisites: C.E. 422 and 542 or equivalent. Staff
Structural designs of foundations including spread footings, combined footings, raft foundations retaining structures, driven piles, drilled piles, caisson and cofferdams.
- 690. Civil Engineering Seminar.** (Arr.) S. Staff
- 694. Selected Problems in Civil Engineering.** (Arr.:Arr.:0) Staff
- 697. Research in Civil Engineering.** (Arr.) F.S. Staff
- 699. Thesis for Master's Degree.** (Arr.:Arr.:0) F.S. Staff

Dramatic Arts and Speech

Dramatic Arts

Professors: Gledhill, Hansen (chairman, Steadman House), Mitchell.
Associate Professor: Metten.

Speech

Professors: Bateman, Morley.
Assistant Professors: Baer, Clinger (chairman, Elliott House).

DEPARTMENT OF DRAMATIC ARTS

Fields

Dramatic arts and theatre, interpretation, and radio and television.

Requirements

For full graduate standing as a major in dramatic arts and theatre, interpretation, or radio and television, the student must present as background Dramatic Arts 121, 123, 241, Speech 101, or their equivalents, plus 12 hours of electives approved by the chairman of the department. Academic programs are available leading to the M.A. degree.

During the first semester of graduate study, candidates for the master's degree must pass a written test to demonstrate proficiency in background in the area in which they elect to major.

It is expected that graduate students will acquaint themselves with all the general regulations for advanced degrees as outlined by the Graduate School.

The requirements for the master's degree may be completed under Plan A (requiring a thesis) or under Plan B (other work substituted for the thesis).

Candidates for the nonthesis degree are required to complete 24 graduate semester hours in the major, 12 graduate semester hours in the minor, and four graduate semester hours in electives, for a total of 40 semester hours. The following courses are required in the 40-hour total: Dramatic Arts 564, 565, 643.

The candidate must successfully complete a written comprehensive examination near the close of his course work. The written examination will cover the following areas: playwriting, design for the stage, lighting, costume design, technical production, theatre-business-management, acting, directing, theatre history, dramatic literature, and dramatic theory and criticism.

Under the direction of the chairman of the special committee, the candidate must complete a scholarly paper or monograph outside the regular class research.

A detailed list of requirements may be obtained from the office of the chairman of the department.

Following are divisions of courses in dramatic arts:

Dramatic arts and theatre: 555, 564, 565, 571, 572, 573, 577, 578, 643, 667, 668, 670, 671, 672, 673, 674, 675, 676, 678, 697, 699.

Interpretation: 423, 643, 660, 661, 662, 663, 667, 696, 699.

Speech: 527.

Radio and television: 577, 578, 603, 605, 643, 670, 672, 673, 678, 690, 691, 699.

Graduate Courses

555. Theatre Workshop. (2-4:2-4:2) Su. only. May be repeated. Hansen
 Practical production on the graduate level.

564. Theatre History I. (3:3:0) F. Hansen
 The development of the theatre, covering Primitive, Egyptian, Greek, Roman, Medieval, and Elizabethan periods.

565. **Theatre History II.** (3:3:0) S. Metten
The development of the theatre, covering the Restoration Period in England, the Western theatre in the 19th and 20th centuries, and the Oriental theatre.
- 572, 573. **Children's Theatre.** (2:2:1) F. Mitchell
Directing for audiences of children and youth. Participation in Youtheatre productions. Attendance at Monday night Mask Club recommended.
- 577, 578. **Playwriting.** (1-2:1-2:0) F.S. Metten, Mitchell
Advanced techniques and theories.
603. **Radio and Television Projects.** (1-4:1-4:0) S. Rich
605. **History of Radio and Television Programming.** (2:2:0) S. Staff
643. **Methods and Problems of Research in Speech and Dramatic Arts.** (2:2:0) F. Metten
Required of all graduate students. Should be taken as early as possible.
660. **Theory of Interpretation** (2:2:0) S. Gledhill, Metten
661. **Oral Interpretation of Classical Literature** (2:2:0) F.S. Metten, Mitchell
662. **Regional Dialects.** (2:2:0) S. Clinger
663. **Program Building and Lecture Recital.** (2:2:0) F. Gledhill, Metten
667. **History of Acting.** (2:2:0) S. Hansen
Styles and theories from Classical to Method.
668. **Special Problems in Theatre History.** (1-3:1-3:0) F.S. Staff
Oriental theatre and the Free theatres of Europe.
670. **Advanced Play Production—Technical.** (2:2:0) S. Staff
A formal study of the "isms" from the point of view of stage design.
671. **Experimental Theatre.** (2:2:0) F. Hansen
672. **Problems of the Producing Director.** (2:2:0) F. Staff
673. **Advanced Play Production - Directing.** (2:2:0) S. Hansen, Metten
674. **Projects in Theatre.** (1-4:1-4:0) F.S. Staff
- 675, 676. **Stage Design.** (2:2:1) F.S. May be repeated. Staff
678. **Stage Lighting.** (1-2:1-2:0) F.S. Staff
690. **Seminar in Mass Communications.** (1-3:1-3:0) F.S. Williams
691. **Selected Readings in Radio and Television.** (1-3:1-3:0) F.S. Staff
696. **Seminar in Interpretation.** (1-3:1-3:0) F.S. Gledhill, Metten
697. **Seminar in Arena Theatre.** (1-4:1-4:0) F.S. Hansen
699. **Thesis for Master's Degree.** (Arr.) F.S. Staff

DEPARTMENT OF SPEECH

Following are divisions of courses in speech:

Public Address: 521, 524, 525, 527, 590, 621, 622, 623, 624, 643, 692, and 699. 401 and 402 may be counted in this field in harmony with general regulations of the Graduate School.

Speech Pathology and Audiology: 542, 545, 547, 560, 561, 640, 641, 643, 645, 646, 647, 648, 656, 657, 693, 694, 695, 699.

524. **High School Forensics and Programming.** (1-2:1-2:1-6) S. Staff

525. Debate Coaching. (1-2:1-2:0) F.S.	Staff
527. Storytelling. (2:2:0) F.S.	Clinger, Hansen
542. Organic Speech Disorders. (2:2:0) S.	Baer
545. Public School Audiometry. (2:2:2) F.S. Prerequisite: Speech 373.	Staff
547. Psychology of Speech. (2:2:0) S. Prerequisite: Psychology 111.	Baer, Morley
560. Clinical Audiology. (2:2:2) F.S. Prerequisite: Speech 373.	Morley
561. Hearing Aids. (1:1:0) S.	Staff
590. Selected Readings and Projects in Public Address. (1-2:0:0) F.S.	Staff
621. Ancient Rhetoric and Oratory. (2:2:0) F.	Staff
622. History of British Public Speaking. (2:2:0) S.	Staff
623. History of American Oratory and Public Address. (2:2:0) F.	Bateman
624. Contemporary Public Address. (2:2:0) S.	Bateman
640. Internship in Advanced Methodology and Clinical Practicum in Speech Pathology. (1-2:1-2:0) F.S.	Staff
641. Internship in Advanced Methodology and Clinical Practicum in Audiology. (1-2:1-2:0) F.S.	Staff
643. Methods and Problems of Research in Speech and Dramatic Arts. (2:2:0) F.	Baer, Metten
Required of all graduate students. It is imperative that graduate students take this course early in their graduate program.	
645. Advanced Studies in Stuttering. (2:2:0) S.	Morley
646. Advanced Studies in Cleft Palate. (2:2:0) F.	Baer, Morley
647. Advanced Studies in Cerebral Palsy. (2:2:0) F.	Baer
648. Advanced Studies in Aphasia. (2:2:0)	Baer
656. Special Problems in Speech Pathology. (1-4:1-4:0) F.S.	Staff
657. Special Project in Audiology. (1-2:1-2:0) F.S.	Staff
692. Seminar in Public Speaking. (1-3:1-3:0) F.S.	Bateman, Clinger
693. Special Studies in Speech Pathology. (1-3:1-3:0) F.S.	Staff
694. Special Studies in Audiology. (1-2:1-2:0) F.S.	Morley
695. Seminar in Psychoacoustics of Speech and Hearing. (1-3:1-3:0) F.S.	Baer, Morley
699. Thesis for Master's Degree. (1-6:Arr.:Arr.) F.S.	Staff

Economics

Professors: H. R. Clark, Nelson.

Associate Professors: W. Clark, Davies, Doxey (chairman, 302 JKB), Mangum.

For full graduate standing a student in economics must have completed Economics 111, 112, either 345 or 346, and Statistics 221 or their equivalents.

If either 345 or 346 have not been completed, that course must be a part of the graduate program. Economics 475 must be a part of the graduate program if it was not taken as an undergraduate.

There are two basic programs in economics:

1. General economics—the student in this program may select 15 hours of work under the guidance of his committee. This program must include Economics 586, 587, and 594. In the event the student has had Economics 274 in his undergraduate work, course 594 may be waived.
2. Junior college teaching of economics—those preparing to teach economics in the junior colleges should acquire either a junior college or a secondary teaching certificate. The junior college certificate requires the completion of Education 640, 642, and 644. The major work, consisting of 15 hours, should be selected to add breadth of understanding of economic principles and institutions and must include Economics 594 (unless 274 was taken as an undergraduate) and two of the following courses: Economics 580, 586, and 587. Depending upon the graduate's background and interest, the minor will usually be selected from one of the following fields: accounting, business management, geography, political science, psychology, or statistics.

Students in both programs must complete an acceptable thesis in addition to the 15 hours of graduate classwork in economics. They should also register for English 99 and Economics 696 (1 sem. hr.) during their first semester of graduate work.

Graduate Courses

510. **Workshop on Economic Education.** (3:Arr.:Arr.) Su. (Continuous for three weeks)
530. **Advanced Economic Development.** (3:3:0) F. Wirthlin
535. **Economic Problems of Asia.** (3:3:0) S. Staff
558. **International Trade and Finance.** (3:3:0) S. Doxey
575. **Government Finance.** (3:3:0) F. Mangum
576. **Government and Business.** (3:3:0) S. Mangum
580. **History of Economic Thought.** (3:3:0) F. Davies
586. **Theory of Price.** (3:3:0) F. Wirthlin
587. **Theory of Income, Employment, and the Price Level.** (3:3:0) S. Wirthlin
588. **Econometrics.** (2:2:0) F. Prerequisites: Math 110; Statistics 221; Economics 345 and 346. Staff
590. **Advanced Economic Problems.** (1-2:Arr.:Arr.) F.S.Su. Staff
594. **Seminar in Economic History.** (2:2:0) F. Doxey
681. **Contemporary Economic Thought.** (2:2:0) S. Staff
682. **Business and Economic Fluctuations.** (2:2:0) F. Nelson
692. **Seminar in Monetary and Fiscal Policy.** (2:2:0) F. Prerequisite: Economics 345. Staff
693. **Seminar in Comparative Economic Systems.** (2:2:0) S. Nelson
694. **Seminar in Labor Economics and Labor Relations.** (2:2:0) S. Prerequisite: Economics 461. Davies, Mangum
- 696, 697. **Research.** (Arr.) F.S.Su. Staff
699. **Thesis for Master's Degree.** (Arr.) Staff

These courses also count in economics but cannot be used for a graduate minor in Economics:

Geography 522. Urban Geography. (2:2:0)

Agricultural Economics 525. Production Economics. (2:2:0)

Geography 533. Industrial Geography. (3:3:0)

Agricultural Economics 580. Agricultural Policy. (2:2:0)

Electrical Engineering Science

Professor: Jonsson.

Associate Professors: Monson (chairman, 175 ELB), Clegg, Simonds.

The Department of Electrical Engineering Science offers the master's degree in the areas of electronics and solid state, communications, computers, acoustics, electromagnetic fields, network synthesis, and automatic control. All students working toward a graduate degree in electrical engineering are expected to (1) fulfill the general requirements of the Graduate School, (2) complete a minimum of 15 semester hours in the major field exclusive of thesis and (3) complete a minimum of nine hours in mathematics and other basic sciences, of which there must be a minimum of 6 hours in mathematics. Each student is required to take E.E. 698, Readings, and Seminar prior to the start of his graduate research. The student should normally choose a major professor and with him determine an advisory committee prior to or at the beginning of his first semester of residence at the University. Either Option I or II is available to the student.

In view of the engineering science emphasis given to the undergraduate curriculum, the transfer student may find it necessary and desirable to take certain courses normally required of the undergraduate student at Brigham Young University. Prospective majors should consult the department prior to registration to determine if such a course will be considered remedial or allowed to apply on the degree.

Graduate Courses

511, 512. Network Synthesis. (3:3:0 ea.) Arr. Prerequisites: E.E. 312, 411.

Simmonds

Designed to present the basic theory for the synthesis of 2-terminal and 4-terminal networks. Various basic approaches are enumerated and applied to ladder and lattice types of filter networks. Insertion loss and phase shift characteristics and means of meeting such requirements.

516. Servomechanisms. (3:3:0) Arr. Prerequisite: E. E. 411.

Application of design principles, carrier systems, component description and specification, multiloop problems including signal flow graphs and synthesis.

517. Digital and Sampled-data Control Systems. (2:2:0) Arr. Prerequisite: E.E. 411.

Basic theory and techniques for the analysis and design of digital and sampled-data control systems and related problems based on the Z-transform method.

523. Digital Computer Engineering. (3:2:3) Arr. Prerequisite: fourth year standing as an engineer.

Staff

A study of the logical design and operation of digital computers.

528. Analog Computer. (2:2:0) Arr. Prerequisite: E.E. 302 or 442.

Staff

Theory and operation of summing, integrating, and differentiating circuits; function generators and operational amplifiers and their applications to analog computers. Also the application of signal-flow graphs to the analysis and simulation of analog computer systems.

- 531. Power Systems.** (2:2:0) Arr. Prerequisite: E.E. 432. Staff
The analysis and design of electrical power distribution systems and a study of electrical power distribution system protection.
- 537. Advanced Control Machinery Laboratory.** (1:0:3) S. Prerequisite: E. E. 411. Staff
This course constitutes a block of experiments in the area of machinery control systems, machinery characteristics, and power distribution methods.
- 541. Switching, Timing, and Pulse Circuits.** (4:3:3) F. Prerequisite: E.E. 442. Clegg
Passive and active circuits utilizing tubes, transistors, diodes, and other devices.
- 542. Advanced Electronic Devices and Circuits.** (3:3:0) S. Prerequisite: E.E. 541. Clegg
Consideration is given to lumped instantaneous circuits including switching memory, shaping, and generation.
- 545. Advanced Amplifier Circuits.** (3:3:0) F. Prerequisite: E. E. 442. Monson
This course will consider many different devices as used in amplifier circuits.
- 562, 563. Advanced Communication Theory.** (3:3:0 ea.) Prerequisite: E.E. 462. Staff
Transmission through electric networks, periodic sampling, pulse modulation, analysis of information—transmission systems, and noise considerations.
- 567. Advanced Communications and Electronics Laboratory.** (1:0:3) S. Prerequisite: E. E. 462. Staff
This course constitutes a block of experiments in the area of U.H.F. techniques, electronic circuits, communication systems, pulse forming networks, transmission lines, and filters.
- 570. Illumination.** (2:2:0) Arr. Prerequisites: E.E. 312, 441. Monson
Principles and design of artificial illumination for various applications; lamp characteristics; measurements; costs.
- 580. Elements of Acoustics.** (2:2:0) Arr. Prerequisite: fifth year standing in electrical engineering. Monson
Brief course in the fundamentals of sound production, transmission, and reception with an introduction into sound application in public address and other engineering systems.
- 581. Psycho-Acoustics.** (5:5:0) Arr. Prerequisite: E.E. 442. Staff
Speech and hearing from a communication engineering viewpoint. Synactical analysis of speech and hearing processes are developed. Known experimental facts about speech and hearing are systematically studied and compared with calculated results. Methods of calculating and measuring articulation index of talker-listener pair when using any specified type of communication system.
- 584, 585. Advanced Musical Acoustics.** (2:2:0 ea.) Arr. Prerequisites: Physics 561, 562, or E.E. 580. Monson
Technical study of acoustical behavior of different musical instruments, consideration of sound power output of single instruments and ensembles, stereophonic reproduction of music, possibilities of electronic musical instruments.
- 587. Architectural Acoustics.** (3:3:0) Arr. Prerequisites: Physics 211, 212. Monson
Fundamental behavior of sound in rooms; effects of shape and size upon perception of speech and music; proper use of public address and sound reinforcing systems, sound absorption and insulation properties of different kinds of room walls; kind and amounts of sound absorption materials to use in sound treatment of rooms and auditoriums.

- 591, 592. Seminar and Field Trips.** (1:0:3 ea.) F.S. Prerequisite: fifth year standing in electrical engineering. Staff
Student and faculty presentation of special topics and subjects of current interest; visits to industries displaying varied types of electrical engineering applications. Participation on the annual field trip is required.
- 598. Special Problem.** (Arr.) F.S. Staff
Registration by permission of professor sponsoring problem. A maximum of two credit hours may be applied toward filling the restricted elective requirement.
- 618. Non-Linear Analysis.** (3:3:0) Arr. Prerequisite: E. E. 411. Jonsson
Consideration of second order non-linear differential equations, problems of discrete systems, design in the phase plane, adaptive control systems, dynamic programming.
- 619. Non-Deterministic Control Systems.** (3:3:0) S. Prerequisite: E. E. 411. Jonsson
Statistical design principles, decision theory, competitive situation, queueing systems and linear programming as applied to control systems.
- 623. Advanced Digital Computers.** (3:3:0) S. Prerequisites: E. E. 523, 541. Staff
Advanced theory and operation of digital computers and their design and application to engineering, scientific, and control problems.
- 645, 646. Microwave Devices.** (3:3:0 ea.) F.S. Prerequisite: E.E. 661, 662 currently. Staff
Consideration is given to electronic and solid state devices which have particular application to the propagation, attenuation, modification, and detection of frequencies at and above the S-band.
- 661, 662. Advanced Electromagnetic Fields.** (3:3:0 ea.) F.S. Prerequisite: E.E. 461 or equivalent. Staff
Advanced problems of wave propagation, reflection, and transmission; static and dynamic boundary value problems including general coordinate systems and conformal transformations; power losses in electromagnetic systems and resonant cavity perturbations by approximation techniques. Topics in wave patterns, impedance functions and radiation applied to transmission lines and antennas.
- 697. Master's Candidate Research.** (1-4:Arr.:Arr.) Staff
- 698. Readings and Seminar.** (1:1:0) F. Prerequisite: graduate standing. Staff
It is expected that every graduate student will make a literature study and report the results of such readings, outlining his proposed problem, at a seminar with other graduate students and faculty before commencing his research and thesis.
- 699. Thesis for Master's Degree.** (1-6:Arr.:Arr.) Arr. Prerequisite: graduate standing. Staff

English

Professors: Britsch, B. Clark (chairman, 303 McK), Christensen (emeritus), Farnsworth, Hart, Jacobs, Larson, Spears, Young.
Associate Professors: Cheney, M. Clark, Tanner, Thomson, West.
Assistant Professors: Ellsworth, Gassman, J. Thomas, Wood.

Requirements

A graduate student may major in either English or American literature; he may minor in a subject outside the English Department or in English literature, American literature, comparative literature, or English language. In addition, he

should complete the University requirements for the Master of Arts degree, which is the only graduate degree offered in the English Department. He should have reading proficiency in at least one foreign language, preferably French or German.

Among the thirty hours required for a Master of Arts degree, each student must take the following courses:

	Hours
A. 615. Bibliography and Methods of Research	2
B. 624. Old English	3

The following courses should also be included if the student did not have them as an undergraduate:

A. 421 or 621. The History of the English Language	3
B. 450 or 650. Literary Criticism	3

In fulfilling the thesis requirements for a master's degree in English, a student may select any one of the following three options:

- (1) One long thesis on a topic demanding research, criticism, or both;
- (2) Three long papers written in three different areas of English or American language or literature and on topics demanding research, criticism, or both;
- (3) Two long papers written in two different areas of English or American language or literature and on topics demanding research, criticism, or both; and one long paper in the area of imaginative writing.

The work done under any of the above three options is under the direction of the student's advisory committee and must fulfill all of the requirements of form, date of submission, and binding that apply to a regular master's thesis.

The department stipulates that two hours of "B" grade or better in the series of English 318 and 319, or the equivalent directed experience in writing, be regarded as prerequisite for application to use imaginative writing as part of option (3) listed above. With this application, the student must forward to the graduate committee in English samples of his best writing in order that the committee may determine whether he is qualified to use imaginative writing as part of his thesis requirement.

Remedial Course

99. **Problems in Thesis Writing.** (0:2:0) F.S.Su. Britsch, Staff

Graduate Courses

- 500-509. **Eminent American Writers.** (1:1:0 ea.) F.S.Su. M. Clark, Staff
Different writers are treated each year in this series.

- 510-519. **Eminent English Writers.** (1:1:0 ea.) F.S.Su. Staff
Different writers are treated each year in this series.

529. **Structure of American English.** (3:3:0) F.Su. Staff
Application of the methods of linguistic science to the description of the phonology, morphology, and syntax of American English.

572. **European Literature of the Renaissance.** (3:3:0) F. Spears
A comparative study of continental European literature of the Renaissance in its relations to English literature.

573. **European Literature of the 17th and 18th Centuries.** (3:3:0) S. Spears
A comparative study of continental European literature of the 17th and 18th centuries in its relations to English literature.

574. **European Literature from 1760-1850.** (3:3:0) F. Farnsworth, Spears
Comparative study of the romantic movements in England, Germany, France, Spain and Italy.

575. **European Literature from 1832 to 1914.** (3:3:0) S. Farnsworth, Spears
Comparative study of English, German, French, Spanish, and Russian
literature of this period, including naturalism, realism, and symbolism.
582. **Extended Readings in Shakespeare.** (3:3:0) F.S. Young
Extensive study of the body of Shakespeare's works.
615. **Bibliography and Methods of Research.** (2:2:0) F.Su. Gassman, Larson
621. **History of the English Language.** (3:3:0) S.Su. Staff
624. **Old English.** (3:3:0) F.Su. Young
625. **Beowulf.** (2:2:0) S. Young
626. **Middle English.** (2:2:0) S. Christensen
631. **The English Novel.** (3:3:0) F.Su. B. Clark
635. **The American Novel.** (3:3:0) S.Su. M. Clark, Jacobs
641. **The English Drama.** (3:3:0) S.Su. Staff
650. **Literary Criticism.** (3:3:0) S.Su. M. Clark, Hart
661. **Colonialism and Puritanism in American Literature.** (3:3:0) S.Su. Jacobs, Thomson
662. **Romanticism in American Literature.** (3:3:0) F.Su. Staff
664. **Realism and Naturalism in American Literature.** (3:3:0) F.Su. M. Clark, Jacobs, Staff
669. **Teaching English in the Secondary Schools.** (2:2:0) S.Su. West
671. **The Medieval Period in English Literature.** (2:2:0) S.Su. Christensen
672. **The Renaissance in English Literature.** (3:3:0) F.Su. Larson, Wood, Young
673. **Neo-Classicism in English Literature.** (3:3:0) S.Su. Gassman, Hart
674. **Romanticism in English Literature.** (3:3:0) F.Su. Cheney, B. Clark
675. **The Victorian Age in English Literature.** (3:3:0) S.Su. B. Clark, Farnsworth
680. **Seminar in Modern Literature.** (3:3:0) F.Su. Hart, Larson
682. **Shakespeare.** (3:3:0) F.Su. Hart
691. **Research in Folklore.** (2:2:0) S. Cheney
Directed study and research in folk tales, folk poetry, etc., especially as
they are related to the Mormon heritage and tradition.
695. **Individual Readings in English.** (1-2:1-4:0) F.S.Su. Staff
699. **Thesis for Master's Degree.** (1-6:Arr.:Arr.) F.S.Su. Staff

Family Life Education

Professors: Cannon, Knowles, Moss, Porter (chairman, 1239 SFLC).

Fields

Child development, family relationships, marriage and family counseling.

Requirements

The Department of Family Life Education offers training leading to the

Master of Science and Doctor of Philosophy degrees. A student must have adequate preparation on the undergraduate level before beginning work leading to one of these degrees. The admissions committee of the graduate faculty of the Department of Family Life Education determines whether the student is properly prepared.

Master's Degree

(For general requirements see Graduate School regulations.)

Requirements for a master's degree in Family Life Education include a general examination at the beginning of the graduate program to establish the student's mastery of basic undergraduate courses in Family Life Education. Normally the student meets the major and minor requirements as described under option one in the Graduate School regulations. However, the student's advisory committee may plan the program according to option two. Additional requirements include a thesis prepared under the direction of the student's advisory committee in which he interprets and reports the results of his research work; the satisfactory performance in the final oral examination which will evaluate the student's competence in his major and minor fields and his ability to defend his thesis.

Doctor of Philosophy Degree

(For general requirements see Graduate School regulations.)

Requirements for a Doctor of Philosophy degree in Family Life Education include an advisory evaluation examination to be administered after the completion of one year of graduate work, to be used in determining the student's qualifications to continue graduate studies and to help plan his program; a minimum of two graduate courses in each of the following areas: child development, family relationships, research methodology and statistics, and counseling theory and practice; (If a student is sufficiently qualified, a year at the Merrill-Palmer Institute of Human Development and Family Life, Detroit, Michigan, may be included in his program); comprehensive examination, both written and oral, covering the general areas of human development and family relationships and the chosen minor fields; work in the major field plus one or two minors in related areas as determined by the student and his advisory committee; a dissertation embodying the results of original research; and an oral presentation and defense of his dissertation before a formally appointed committee.

HDFR

Graduate Courses

- 510, 511. Advanced Child Development.** (3:3:0 ea.) F.S. Prerequisites: H.D.F.R. 210, 412. Knowles

Intensive study of principles of child development and behavior as they relate to home situations, nursery schools, day-care centers, and other children's programs. Observation of individuals from infancy through adolescence.

- 520. Workshop in Child Development.** (2:2:0) Su. Prerequisite: 8 hours H.D.F.R. or permission of department chairman. Staff

Intensive study of application of principles of child development and child guidance.

- 560. Workshop in Family Relationships.** (2:2:0) Su. Prerequisite: 8 hours H.D.F.R. or permission of department chairman. Staff

Intensive study of application of principles of Human Development and Family Relationships.

- 570. Community and Professional Responsibilities to Children and Families.** (3:3:0) F.S. Prerequisites: H.D.F.R. 210, 361. (Sociology 111 Rec.) Moss

Acquaintance with resources of the community as they relate to the welfare of children and families. A consideration of the responsibilities of professional persons working with children and families.

- 575. Parent Education.** (2:2:0) S. Prerequisite: consent of instructor. Staff
Basic principles in organization of parent study programs. Formulation and presentation of programs for parents.
- 580. Introduction to Marriage and Family Counseling.** (2:2:0) S. Prerequisite: consent of instructor. Staff
Theories and techniques used in marriage and family counseling. Consideration of individual and group counseling as it pertains to the family.
- 590. Readings in Human Development and Family Relationships.** (1-2:1-2:0) F.S.Su. Prerequisite: consent of instructor. Staff
Discussions and reports of current readings in this field. Open to students who have completed fifteen hours of human development and family relationships.
- 595. Special Topics in Human Development and Family Relationships.** (1-2:1-2:0) F.S.Su. Staff
Individual study for qualified students majoring in human development and family relationships upon consultation with the instructor and the chairman of the department.
- 596. Research Problems and Methods in Human Development and Family Relationships.** (2:2:0) S. Cannon, Moss, Rollins
Analysis of research methods used in human development and family relationships. Students have active experience in formulating a research project.
- 611. Current Concepts in Research in Child Development.** (2:2:0) S. Knowles
- 661. Dynamics of Family Interaction.** (2:2:0) S. Prerequisite: H.D.F.R. 360. Porter
- 663. Critical Problems in Family Life.** (2:2:0) F. Prerequisite: H.D.F.R. 361. Cannon
- 664. Current Concepts and Research in Family Relationships.** (2:2:0) F. Staff
- 666. Family Problems of High School Students.** (2:2:0) Su. Moss
- 667. Problems of Teaching Marriage and Family Relationships in College.** (2:2:0) S. Cannon
- 685. Developmental Use of Play Experiences.** (2:2:0) S. Prerequisite: consent of instructor. Staff
- 692, 693. Seminar.** (2:2:0 ea.) F.S. Cannon, Moss, Porter
- 697. Independent Research.** (1-3:1-3:0) F.S. Staff
- 699. Thesis for Master's Degree.** (1-6:1-4:0) Staff
- 780. Marriage and Family Counseling.** (2:2:0) F. Prerequisites: H.D.F.R. 580; Grad. Ed. 646; consent of instructor. Staff
- 781. Case Analysis in Marriage Counseling.** (2:2:0) S. Prerequisite: H.D.F.R. 780. Staff
- 785, 786. Internship in Marriage Counseling.** (3:1:6 ea.) F.S. Prerequisites: H.D.F.R. 780 and 781. Staff
- 792. Seminar in Marriage Counseling.** (2:2:0) S. Staff
- 794. Special Topics in Human Development.** (1-2:1-2:0) F.S.Su. Cannon, Moss, Porter
- 795. Special Topics in Family Relationships.** (1-2:1-2:0) F.S.Su. Cannon, Moss, Porter
- 797. Doctoral Candidate Research.** (2-4:2-4:0) F.S.Su. Cannon, Moss, Porter
- 799. Dissertation for the Ph.D. Degree.** (Arr.) F.S.Su. Staff

Homemaking Education

Graduate Courses

- 521. Workshop in Homemaking Education.** (2:2:0) Prerequisite: consent of instructor. Staff
Intensive study of application of principles and theory in Homemaking Education.
- 530. Homemaking Education for Adults.** (2:2:0) Prerequisite: consent of instructor. Poulson
The principles, practices, programs, materials, and resources for teaching Homemaking Education to adults.
- 532. Evaluation in the Teaching of Homemaking Education.** (2:2:0) Prerequisites: Student Teaching 479 and consent of instructor. Poulson
Analysis of evaluation techniques and construction of workable evaluation devices unique to the teaching of Homemaking Education.
- 630. Methods and Curriculum in Homemaking Education.** (3:3:0) Prerequisite: Minimum of one year teaching experience. Poulson
Intensive study of methods of teaching and curriculum development for homemaking programs in the secondary schools.

Food and Nutrition

Professors: Bennion (chairman, 2218 SFLC), Morris.

Requirements

The department offers work leading to the Master of Science degree in food and nutrition. For full graduate standing a student must have completed a bachelor's degree with a major in food and nutrition or a closely related field, with basic courses in the physical and biological sciences. Students with subject matter deficiencies may be recommended for admission, but these deficiencies must be removed before a degree is granted.

The specific selection of courses for a graduate degree is based upon the student's objectives and interest and is planned in consultation with the major professor. The emphasis in course work and thesis problem may be in the area of food science or in nutrition. However, all candidates for a master's degree in food and nutrition must have completed the following: Food and Nutrition 635, 664, 645 or 666, 695 or 696; a minimum of 6 credits in 690 and 691 combined; Chemistry 581 and 582. A thesis is required.

Graduate Courses

- 590. Readings in Food and Nutrition.** (2:2:0) S. Prerequisite: 10 credit hours in food and nutrition or consent of instructor. Staff
- 594. Special Problems in Food.** (1-2:0:3-6) F.S. Prerequisite: permission of instructor and chairman of department. Staff
Designed for students who have completed at least 12 hours in food and nutrition including Food and Nutrition 590. Independent study of a special problem in food under the direction of an instructor.
- 595. Special Problems in Nutrition.** (1-2:0:3-6) F.S. Prerequisite: permission of instructor and chairman of department. Staff
Designed for students who have completed at least 12 hours in food and nutrition including Food and Nutrition 590. Independent study of a special problem in nutrition under direction of an instructor.

635. **Advanced Human Nutrition.** (3:3:0) F. (Offered 1963 and alternate years)
Prerequisite: Food and Nutrition 335 or equivalent.
An advanced study of the principles of human nutrition.
645. **Advanced Child Nutrition.** (2:2:0) S. (Offered 1964 and alternate years)
Prerequisites: Food and Nutrition 335 and 345 or equivalent. Staff
664. **Science and Experimental Foods.** (3:2:3) F. (Offered 1964 and alternate years)
Prerequisite: Food and Nutrition 464. Bennion
Protein foods; simple colloidal systems, gels, emulsions, and foams.
666. **Science and Experimental Foods.** (3:2:3) S. (Offered 1963 and alternate years)
Prerequisite: Food and Nutrition 464. Bennion
Enzymes in food; carbohydrate and lipid food materials.
690. **Seminar in Food.** (1-2:1-2:0) Arr. Staff
691. **Seminar in Nutrition.** (2-4:2-4:0) Arr. Staff
695. **Methods of Research in Nutrition.** (2:1:5) Arr. Prerequisite: Food and Nutrition 635. Staff
696. **Methods of Research in Foods.** (2:1:5) Arr. Prerequisite: Food and Nutrition 664 or 666. Staff
699. **Thesis for Master's Degree.** (2-4:Arr.:Arr.) Staff

Geography

Associate Professor: Layton (chairman, 167D HGB)

Assistant Professor: Tuttle.

Requirements

The department offers work leading to the Master of Science degree. Candidates for the degree will be admitted on a provisional basis until completion of an oral examination demonstrating a sound knowledge of subject matter as covered in the undergraduate degree in Geography. Students must also be prepared to present evidence of their ability to complete written assignments if they have not previously completed such work as undergraduates within the department. Deficiencies in any area must be removed either by additional class work, or by individual study, as determined in consultation with the faculty of the department. Admission on a degree-seeking basis will be made only after completion of this examination and arrangement of any needed remedial work.

Degree-seeking students are allowed a wide range of choice in individual projects and supporting classes according to their particular interest. All such classes must be approved, however, by the major and minor professors in consultation with the student at the beginning of his work. All candidates must include Geography 601, 620, 698, and 699 within their program.

Graduate Courses

504. **Geographic Field Techniques.** (2:1:2) S. Staff
For majors only.
522. **Urban Geography.** (2:2:0) F. (Not offered 1963-64) Layton
Distribution of urban areas, their development, internal land use patterns, and functions in the world's economy.
533. **Industrial Geography.** (3:3:0) Prerequisite: Geography 231. Layton
A systematic analysis of location patterns of major industries in the United States; raw materials, power resources, and other factors in industrial location.

552. **United States.** (2:2:0) Prerequisite: Geography 351. Tuttle
A concentrated study of various phases of the geography of the U. S.
Considerable research and reporting by individual students is required.
556. **South America.** (2:2:0) (Not offered 1963-64) Prerequisite: Geography Layton
455.
557. **Caribbean Area.** (2:2:0) Prerequisite: Geography 455. Layton
561. **Western Europe and the Mediterranean.** (2:2:0) S. Prerequisite: Geography Staff
460.
A comprehensive study of the systematic and regional geography of non-
Communist Europe.
562. **U.S.S.R. and Its Satellites.** (2:2:0) Prerequisite: Geography 460 or 470 or Staff
consent of instructor.
A concentrated study of the physical features, resources, agriculture, in-
dustries, and distribution of peoples.
571. **Orient.** (2:2:0) F. (Not offered 1963-64) Prerequisite: Geography 470. Staff
A comprehensive study of the systematic and regional geography of the
Orient.
580. **Geography of Underdeveloped Areas.** (2:2:0) S. Prerequisite: consent of in- Staff
structor.
Physical, economic, and human geography as it affects the world's under-
developed areas with emphasis on future development possibilities.
598. **Seminar.** (1:1:0) Arr. Staff
601. **Physical Geography.** (2:1:2) F. Staff
620. **Cultural Geography.** (2:1:2) S. Staff
- 690, 691. **Readings.** (1:1:0) F.S. Staff
For graduate students only.
695. **Special Problems.** (1-2:1-2:0) F.S. Staff
For graduate students only.
- 696, 697. **Research.** (2:2:0) F.S. Staff
698. **Graduate Seminar.** (1:1:0) Arr. Staff
699. **Thesis for Master's Degree.** (1-6:Arr.:Arr.) F.S. Staff

This course also counts in geography:

History 585. **Historical Geography of the U.S.** (2:2:0)

Geology

Professors: Bissell, Bullock, Hansen, Hintze (chairman, 291 ESC), Rigby.

Associate Professors: Clark, Phillips.

Assistant Professor: Bushman.

Fields

Economic geology;
mineralogy and petrology;
paleontology;
stratigraphy and sedimentation;
structural, field, and dynamic geology

Requirements

The following courses, or their equivalents from another university, are prerequisite for all geology students working toward an advanced degree in geology: Geology 111, 112, 251, 252, 311, 312, 313, 460, 470, 480, and 492. A summer field camp, Geology 410, or its equivalent at another institution, is a necessary prerequisite.

The entering graduate student will be expected to have completed substantially the same background course requirements in mathematics, chemistry, physics, biology, and languages, as are required of Brigham Young University undergraduate geology majors. Arrangements to make up any undergraduate deficiencies will be made in consultation with the Geology Department chairman during the first registration of students entering on their graduate work.

The Department of Geology offers training for the master's degree and the degree of Doctor of Philosophy, with specialization in various fields of geology. The graduate student is urged to acquire a broad foundation in geology and to secure adequate training before he concentrates on a chosen branch of the subject. To this end certain fundamental course work is recommended for all students. The course offerings are sufficiently varied and complete in order that all students may select courses according to their needs and inclinations as determined in consultation with their advisers.

It is expected that graduate students will meet all the general requirements for advanced degrees as outlined by the Graduate School. The responsibility of meeting these requirements rests with the student.

The graduate program of the Department of Geology offers instruction in five broad fields of geology, with the following course offerings in each field: (1) economic geology—Geology 507, 512, 520, 530, 535, 540, 545, 551, 591, 621, 641, 646, 655, 661, 662, and 678; (2) mineralogy and petrology—Geology 507, 512, 540, 545, 551, 591, 653, 655, 661, 662, and 671; (3) paleontology—Geology 507, 512, 551, 574, 575, 576, 580, 581, 582, 591, 670, 671, 680, 681, 682, and 685; (4) stratigraphy and sedimentation—Geology 507, 512, 551, 574, 575, 576, 591, 653, 670, 671, and 678; (5) structural, field, and dynamic geology—Geology 507, 511, 512, 530, 551, 591, 610, 615, 670, and 671.

A student may select any one of the five fields for a major. He may elect one or two of the remaining fields for his minor(s). Geology 507, 512, and 551 are required of all graduate students. Geology 696, 698, 699, and 799 are variable credit courses commensurate with work completed in each of these areas. A student should not register for Geology 699 or 799 until he has essentially completed his research and is prepared to write his thesis or dissertation.

Master's Degree. (For general requirements see Graduate School regulations.) Requirements for a master's degree in geology include: (1) at least sixteen hours of formal course work in the major field and at least ten hours of formal course work in one or two minor fields; (2) a written exploratory examination at the beginning of the graduate program; (3) a comprehensive oral examination on the graduate course work prior to his thesis defense; (4) a thesis embodying the results of research under a faculty member's supervision; and (5) a final oral examination on the research thesis.

Doctor of Philosophy Degree. (For general requirements see Graduate School regulations.) Requirements for a Doctor of Philosophy degree in geology include: (1) a minimum of thirty hours of formal course work in the major field and a minimum of fifteen hours of formal course work in each of two minor fields (the minors may be in a related field outside of the Department of Geology in which upper division and graduate courses will be acceptable); (2) one degree or one year of acceptable graduate study at another institution; (3) successful completion of Graduate School foreign language examinations; (4) a comprehensive examination after sixty hours of graduate work and at least one academic year prior to graduation; (5) dissertation embodying the results of original research; and (6) defense of his dissertation before a formally appointed committee at the close of his final year of study.

Graduate Courses

- 501. Rocks and Minerals.** (2:2:0) F.Su. Bullock
Introductory study of fundamentals of rock and mineral classification and identification. Designed to acquaint the student with the earth's common raw materials, their occurrences, and uses. For the nongeology majors.
- 502. Geology for Teachers.** (2:2:0) S.Su. Home Study also. Bushman
Designed to acquaint the teacher with sources of information, projects, and illustrative materials useful in the classroom.
- 507. Founders and Concepts of Geology.** (2:2:0) F. Bushman
The historical development of geology and the men who contributed to it; the concepts and philosophy that make geology distinct from other sciences. Analysis of some of the more controversial problems in geology.
- 511. Geomorphology.** (3:3:0) F. (Offered 1962-63 and alternate years) Bushman
The historical development of geomorphic concepts. The description of land forms and evaluation of the processes that formed them, and the application of this knowledge to paleogeography and economic geology.
- 512. Geology of North America.** (4:3:2) S. Rigby
A region-by-region study of the areal geology, physiography and geologic development of Canada, United States, and Mexico.
- 520. Petroleum Geology.** (4:4:0) S. (Offered 1962-63 and alternate years) Hansen
The origin, classification, physical properties, distribution, accumulation, and methods of exploration of petroleum.
- 530. Engineering Geology.** (3:3:0) F. (Offered 1962-63 and alternate years) Staff
The geological principles and phenomena which are important to an understanding of engineering problems (especially civil engineering), and the relationships which exist between the science of geology and the practical aspects of engineering.
- 535. Ground Water.** (4:4:0) S. (Offered 1962-63 and alternate years) Hansen
The origin, classification, migration, distribution, and production of water found beneath the earth's surface.
- 540. Geophysics.** (3:3:0) F. (Offered 1962-63 and alternate years) Prerequisites: Math 214, Physics 213. Brimhall
The principal objective is to familiarize the student with the scope of geophysics, give insight into methods used by geophysicists, and to outline some of the most important discoveries of these researches.
- 545. Geochemistry.** (3:3:0) F. (Offered 1963-64 and alternate years) Prerequisites: Math 213, Physics 213. Brimhall
The kinds and abundances of elements in the earth, their distribution and the re-distribution in various geologic processes.
- 551. Optical Petrography.** (4:3:4) F. Prerequisites: Geology 252, Physics 202 or 213. Phillips
The behavior of light in crystalline substances and its application to the microscopic identification of minerals as fragments and in thin-section. A consideration of the various schemes of rock classification and the petrographic description of rocks.
- 574. Principles of Stratigraphy.** (2:2:0) F. (Offered 1963-64 and alternate years) Bissell
Study and interpretation of stratified rocks, principles of their origin, distribution, and correlation.

575. **Precambrian and Paleozoic Stratigraphy.** (3:3:0) F. (Offered 1962-63 and alternate years) Hintze
Synthesis of regional stratigraphic relation in North America.
576. **Mesozoic and Cenozoic Stratigraphy.** (3:3:0) S. (Offered 1962-63 and alternate years) Bushman
The basins of deposition (throughout the U.S.) of Mesozoic and Cenozoic rocks and key fossils associated with them. Special emphasis on the distribution of these rocks in the state of Utah.
580. **Invertebrate Paleontology (Protozoans through Brachiopods).** (4:3:2) F. (Offered 1963-64 and alternate years) Clark
Designed for the upper division and the graduate student who desires a broad background in paleozoology, including morphology, paleoecology, evolution, and stratigraphic significance of invertebrates. Basic course for students planning to do graduate work in paleontology or stratigraphy.
581. **Invertebrate Paleontology (Mollusks through Hemichordates).** (4:3:2) S. (Offered 1963-64 and alternate years) Prerequisite: Geology 580. Clark
Continuation of Geology 580.
582. **Biostratigraphy.** (3:2:2) F. (Offered 1962-63 and alternate years) Prerequisite: Geology 480 or 581. Clark
A study of fossils in their stratigraphic setting and principles of paleontologic chronology.
591. **Seminar.** (1:1:0) F. (Offered 1963-64 and alternate years) Rigby
Required of all graduate students; and required attendance of all seniors.
610. **Structural Geology.** (3:3:0) F. (Offered 1963-64 and alternate years) Hintze
Earth structures and their origin, emphasizing foreign examples.
615. **Photogeology.** (3:1:4) S. (Offered 1963-64 and alternate years) Hintze
Techniques useful to practicing geologists; using parallax bar and various instruments applicable to contact print photos.
621. **Oil Field Development.** (3:3:0) S. (Offered 1963-64 and alternate years) Staff
Factors which are important to the production of oil and gas; the economical development of oil and gas fields.
641. **Geophysical Exploration.** (5:4:2) S. (Offered 1962-63 and alternate years) Brimhall
646. **Geochemical Techniques and Mineral Prospecting.** (3:2:2) S. (Offered 1963-64 and alternate years) Prerequisite: Geology 545. Brimhall
A survey of the kinds of techniques employed in geochemical prospecting. About half the course is taken up with a field problem in geochemical prospecting.
653. **Determinative Mineralogy.** (4:2:4) S. Prerequisite: Geology 551. Phillips
Instruction in universal stage, polished opaque section, powder x-ray diffraction, and other advanced methods of mineral identification.
655. **Igneous and Metamorphic Petrology.** (4:3:2) F. (Offered 1962-63 and alternate years) Bullock
A detailed study of igneous and metamorphic rocks; their origin, classification, and distribution.
661. **Ore Deposits.** (4:3:2) F. (Offered 1963-64 and alternate years) Prerequisite: Geology 460. Bullock
A detailed study of the metallic ore deposits, their origin, occurrence, and distribution. Emphasis is placed on the western mining districts.

- 662. Nonmetallic Deposits.** (3:3:0) S. (Offered 1963-64 and alternate years) Phillips
A detailed study of nonmetallic mineral deposits, their mode of occurrence, and their application in the modern industrial world.
- 670. Sedimentation and Sedimentary Tectonics.** (4:3:2) F. (Offered 1962-63 and alternate years) Bissell
Fundamental concepts in the sciences of sedimentology, and laboratory exercises illustrative of processes of sedimentation followed by review and discussions of tectonic environments which control sedimentation. Field trips are taken into areas illustrative of the subject matter.
- 671. Sedimentary Petrology and Petrography.** (4:3:2) S. (Offered 1962-63 and alternate years) Bissell
Field and laboratory classifications and studies of the sedimentary rocks. Particular emphasis is placed on carbonate petrology and petrography, and application to oil occurrence.
- 678. Subsurface Methods.** (4:2:4) S. (Offered 1963-64 and alternate years) Pre-requisite: Geology 551. Bushman
Designed to acquaint the student with the tools and techniques employed by the sub-surface geologist in describing the lithologic characteristics of sub-surface rock; the use of this information for interpreting sedimentation environments, geologic structures, and stratigraphic correlation.
- 680. Micropaleontology.** (3:2:2) F. (Offered 1963-64 and alternate years) Pre-requisite: Geology 480 or 581. Clark
A systematic study of the geologically important micro-fossils, including techniques, morphology, and stratigraphic significance. Conodonts, ostracodes, foraminifera are stressed.
- 681. Quantitative Paleontology.** (3:3:0) F. (Offered 1962-63 and alternate years) Pre-requisite: Geology 480 or 581. Rigby
Introduction to biometrics and systematics of fossil organisms and of fossil assemblages.
- 682. Vertebrate Paleontology.** (3:3:0) S. (Offered 1962-63 and alternate years) Pre-requisite: Geology 480 or 581, or consent of instructor. Clark
A study of the backboned animals through time (Agnatha through Mammalia). Morphology, ecology, phylogeny, and stratigraphic significance are stressed.
- 685. Paleocology.** (4:3:2) (Offered 1963-64 and alternate years) Pre-requisite: Geology 480 or 581. Rigby
Interpretation of ancient environments and of the adaption of organisms to these environments as shown by a systematic treatment of each of the major taxonomic groups and by selected analyses from the professional geologic literature.
- 696. Reading and Conference in Geology.** (1-4:1-4:0) F.S.Su. Staff
- 697. Directed Field Studies.** (Arr.) F.S.Su. Staff
Supervised field work in any of the fields of specialization in geology for candidates of master's degree.
- 698. Research.** (1-4:1-4:0) F.S.Su. Staff
- 699. Thesis for Master's Degree.** (1-4:1-4:0) F.S.Su. Staff
- 797. Directed Field Studies.** (Arr.) F.S.Su. Staff
Supervised field work in any of the fields of specialization in geology for candidates of Ph.D. degrees.
- 799. Dissertation for Doctor of Philosophy Degree.** (Arr.) F.S.Su. Staff

Graduate Department of Education

Professors: Alley, Bauer, Burrup, Callahan, D. Christensen, Clarke, Downing, Egbert (chairman, 205 McKay), Lloyd, Moffitt, Morrill, Oakes, Romney, Woolf (emeritus).

Associate Professors: Babcock, Barnett (emeritus), L. Christensen, Crnkovic, Daines, Harris, Jensen, Krider, Ovard, Parker, Reid.

Assistant Professors: Flandro, Harms, McPhie, Moses, Ord, Wilcox.

The Graduate Department of Education is organized to offer courses for all persons engaged in professional education and service courses to graduate students in other disciplines.

Programs are designed to give special training to school administrators, school business managers, supervisors, curriculum directors, educational psychologists, school psychologists, specialists in counseling and guidance, teachers of special education, master teachers, and other specialists. Such programs are at once intensive and broad in scope. They are designed to give the depth and the breadth needed by specialists in education.

Graduate Degrees. The department offers programs leading to graduate degrees at both the master's and doctorate levels. The Master of Arts, the Master of Science, and the Master of Education are offered. In addition, both the Doctor of Education and the Doctor of Philosophy are offered by this department.

A program for the sixth-year certificate—Specialist in Educational Administration—is offered for school superintendents, assistant superintendents, elementary and secondary school principals, and supervisors.

Requirements for Fields of Specialization in the Area of Educational Administration

Graduate courses for the preparation, certification, and professional development of school administrative and supervisory personnel are offered. Academic work is available for those preparing for professional service in the areas of general administration (including school superintendency, director of educational research, administrative assistants, and others), the school principalship (elementary and secondary), school business management, general supervision (supervisor, director of instruction, curriculum director, and others), and administration of higher education.

Admission to the area with full graduate status is contingent upon the following:

1. Completion of 22 semester hours of education or a valid teaching credential.
2. Compliance with admission requirements of the Graduate School.
3. Evidence of the student's ability to do satisfactory work (to be determined by the faculty of the department).

Note: Utah State certification requirements for administrators call for three years' professional experience at the public school level.

Masters' Degrees

The department offers the Master of Arts, the Master of Science, and the Master of Education degrees in the area of educational administration. See the general requirements for master's degrees elsewhere in this catalog.

It should be noted that a candidate must complete no less than one year as a teacher before completing the field project in the Master of Education program.

Majors: Recognizing the need for providing a broad professional background for administrative-supervisory leadership in education, the department has the following policies regarding courses:

1. Persons preparing for elementary and secondary school principalships

and school supervisors can pursue majors in the department culminating in the master's degree.

2. Persons preparing for school superintendencies and district level administration should elect the sixth-year graduate certificate—Specialist in Educational Administration—or the doctorate in educational administration. Should a student want a master's degree as part of his preparation he should register for and complete a thesis or field project at the appropriate time during his training.
3. All students must complete a core of courses covering general administration, supervision, and research. These include:
 - Ed. 600. **Research and Thesis Writing.** (Does not count for hours toward major.)
 - Ed. 675. **Organization and Administration of Public Schools.**
 - Ed. 677. **Public School Finance.**
 - Ed. 680. **Field Work in Educational Administration.** (Not required of those who have had educational administrative experience.)
 - Ed. 685. **Supervision of Education.**
4. Those interested in an elementary principalship should take, in addition to the above listed courses, Ed. 678 and 768. Minors should be selected from the areas of the college or other departments approved by their advisers.
5. Those interested in a secondary principalship should take, in addition to the above courses, Ed. 679 and 768. Minors should be selected from the areas of the college or other departments approved by their advisers.
6. Those interested in supervisory positions other than principalships should take, in addition to the courses listed in Item 3 above, Ed. 678 or 679 and 768.

Minors: Those minoring in the department should take Ed. 675, 677, 685, and two to three additional hours in courses to be selected by the student and his adviser from offerings in the department.

Sixth-Year Certificate—Specialist in Educational Administration

The department offers a sixth-year program planned for the preparation of school superintendents, assistant superintendents, secondary school principals, and elementary school principals. Sixty semester hours of acceptable graduate work beyond the baccalaureate degree is required. Obtaining a master's degree is encouraged but not required.

To be admitted into the program in full standing, the candidate must (1) present evidence of at least two years of successful professional experience; (2) achieve satisfactory scores on (a) the Ohio State Psychological Examination and (b) the Cooperative General Culture Test; and (3) present evidence of a satisfactory academic background in the area of his intended field of preparation.

The planned program includes the following:

1. **Education Courses Required in Sixth-Year and Doctoral Programs in all Departments.** (12 hours)
Ed. 601, 656, 660, 675, and 631 or 636 or 640.
2. **Courses Required of all Students in Educational Administration.** (8 to 11 hours)
Ed. 552, 677, 685, 687.
Ed. 680 is required of all who have had no school administrative experience.
3. **Courses Required in Cognate Areas.** (8 hours)
A minimum of 8 semester hours in courses approved by the advisory committee is required in one or more of the following fields: economics, political science, psychology, sociology, or business administration. The

following courses are specifically recommended: Sociology 449; Political Science 535.

4. **Required Education Courses in Special Areas of Educational Administration.**

Elementary School Principals. (13 hours)

Ed. 626, 678, 760, 768, 775. In addition the candidate is required to take any of the following courses in which he has not had acceptable undergraduate preparation: Ed. 623, **Science in the Elementary Schools**; Ed. 625, **Social Studies in the Elementary Schools**; Ed. 632, **Reading in the Elementary Schools**; Ed. 633, **Language Arts in the Elementary Schools**; Ed. 634, **Arithmetic in the Elementary Schools**.

Secondary School Principals. (16 hours)

Ed. 550, 639, 679, 762, 763, 768, 775.

Superintendents. (12 hours)

Ed. 678, 679, 690, 768, 775.

5. **Restricted Electives.**

The indicated minimum semester hours must be selected from the following courses:

Elementary School Principals. (10 hours)

Ed. 560, 608, 657, 658, 682, 690, 762; Sociology 512.

Secondary School Principals. (10 hours)

Ed. 608, 627, 652, 657, 658, 682, 683, 684, 690, 765, 772; Sociology 512.

Superintendents. (14 hours)

Ed. 608, 626, 627, 639, 652, 657, 682, 683, 684, 709, 765, 767, 770, 771, 772, 773, 786; Sociology 512.

Students desiring to prepare themselves as **superintendents** normally will elect to take from the above courses: Ed 682, 767, 768, 772, 773.

Students desiring to prepare themselves as **assistant superintendents for school business management** normally will elect to take from the above courses: Ed. 683, 765, 773, 786.

Students desiring to prepare themselves as **assistant superintendents for instruction** normally will elect to take from the above courses: Ed. 626, 639, 709, 767, 768.

Students desiring to prepare themselves as **assistant superintendents for teacher personnel** normally will elect to take from the above courses: Ed. 682, 768, 772.

Students desiring to prepare themselves as **assistant superintendents for pupil personnel** normally will elect to take from the above courses: Ed. 652, 657, 684.

6. **Free Electives:** The remaining hours of credit to be taken may be chosen from either education or cognate area courses as determined by the student and his adviser.

7. **Comprehensive Examination:** A comprehensive examination is administered near the end of the student's last semester of work. A satisfactory score must be achieved in order to be recommended for the certificate—Specialist in Educational Administration.

8. **Residence:** A student must establish residence by spending at least one full semester on campus during the regular school year.

9. **Transfer of Credit:** Eighteen semester hours of credit may be transferred from B.Y.U. off-campus centers. Students from other accredited institutions may transfer thirty credit hours from such institutions.

Doctor of Education Degree

The department offers work leading to a Doctor of Education degree in educational administration with areas of special emphasis in the following:

1. General school administration
 - a. Superintendent
 - b. Assistant superintendent for curriculum
 - c. Assistant superintendent for personnel
 - d. Assistant superintendent for pupil personnel
2. School business management
3. Secondary school administration
4. Elementary school administration
5. Administration of higher education
6. Administration with an emphasis in religious education.

Admission: To receive full admission into the program, students are tested for familiarity with certain fields of significance to education. Satisfactory scores must be obtained in the following tests: (1) scholastic aptitude, (2) vocational interest, (3) personality, (4) effectiveness of expression, and (5) general educational background.

In addition, students must submit evidence of at least two years of successful professional experience and an adequate background in their intended areas of specialization.

Course Work: A minimum of seventy-five semester hours of acceptable credit beyond the baccalaureate degree is required to complete the programs in educational administration.

(I) All students must complete 12 hours in the courses required of all graduate students in education: Ed. 601, 656, 660, 675 and 631 or 636 or 640.

(II) Six hours in the following courses: Ed. 677, 685, 687. Students who have had no administrative experience also are required to take Ed. 680.

(III) A minimum of 12 hours in areas cognate to education is required of all students. The following fields are acceptable: economics, political science, psychology, sociology, and business administration. Other academic areas may be approved by the student's advisory committee. Specifically recommended are Sociology 449, 470; Political Science 535.

(IV) Students planning to specialize in **elementary school administration** are required to take 17 hours consisting of the following courses: Ed. 606, 626, 678, 690, 691, 760, 775. In addition, students are required to take any of the following courses for which there is no evidence of acceptable undergraduate preparation: Ed. 623, 625, 632, 634. Students are also expected to take a minimum of 14 hours from a group of restricted electives as follows: Ed. 560, 608, 657, 658, 682, 762, 767, 773; Sociology 512. To complete the balance of the course work requirements, students are allowed a minimum of 11 to 14 hours of free electives chosen from either education or cognate areas as determined by the student and his chairman.

(IVa.) Students planning to specialize in **secondary school administration** are required to take 24 hours consisting of the following courses: Ed. 550, 606, 639, 679, 690, 691, 762, 763, 768, 775. In addition, students are expected to take 10 hours from a group of restricted electives as follows: Ed. 608, 619, 627, 630, 635, 652, 657, 658, 682, 683, 684, 765, 773; Sociology 512. To complete the balance of course work requirements, students are allowed a minimum of 8 to 11 hours of free electives chosen from either education or cognate areas as determined by the student and his chairman.

(IVb) Students planning to specialize in the areas of **general school administration** and the **administration of higher education** are required to take 17 hours consisting of the following courses: Ed. 606, 678, 679, 690, 691, 773, 775. In addition, students are expected to take 14 hours from a group of restrictive electives as follows: Ed. 608, 626, 636, 639, 645, 652, 653, 682, 683, 684, 730, 760, 765, 767, 768, 770, 771, 772, 786. Students preparing for the area of **school business management** normally will elect to take Ed. 683, 765, 767, 786. Students preparing themselves for the position of **assistant superintendent of instruction** normally will elect to take Ed. 626 or 639, 709, 767, 768. Students preparing themselves for the position of **assistant superintendent for teacher per-**

sonnel normally will elect to take Education 682, 768, 772. Students preparing themselves for the position of **assistant superintendent for pupil personnel** normally will elect to take Ed. 645, 652, 684, 768. Students planning to specialize in the area of **administration of higher education** are required to take Ed. 653, 768, 771, 772.

(IVc) Students preparing for the doctorate in **educational administration with an emphasis in L.D.S. religious education** are required to complete the 12 hours of course work required of all doctoral students and the 6 semester hours of course work required of all in educational administration. Students must complete a 30 hour core in the College of Religious Instruction. Details are available in the College of Religious Instruction. Additional required courses in education consisting of 21 hours are: Ed. 606, 639 or 642, 679 or 771, 682, 690, 691, 768, 775. The balance of course work may be selected as determined by the student and his advisory committee.

Examinations. A comprehensive examination is administered to all doctoral students after approximately 60 semester hours have been completed. A final written examination is administered to all doctoral students at the completion of their course work. The final oral examination is administered at the conclusion of the field project.

Field Project and Report. A research project for the improvement of a program of administration or instruction must be carried out under the direction of the student's advisory committee, after he has passed the final written examination and advanced to candidacy. The report of the field study must meet the same standards of format as the Doctor of Philosophy dissertation and must be submitted under the same schedule and publication requirements.

Requirements for a Minor in Philosophy of Education

This area in the department currently is organized to provide service courses for graduate students in other areas of the college and University. Normally students do not major in subject areas of the department; therefore, a major is not provided at the master's level. A minor in this field is provided for graduate students.

Graduate students enrolling in the area of philosophy of education are expected to take first the basic course, Ed. 601. Variations to this must be approved by the area advisers.

Specialization in Areas of Educational Psychology

Courses are offered in the area of educational psychology leading to (1) advanced degrees in counseling and guidance, measurement, development and personality, learning, statistics and research methods, special education, and (2) certification as school psychologist, as teachers or supervisors of special education, and school counselors.

Admission to the area with full degree status is contingent on (1) compliance with admission requirements of the Graduate School; and (2) evidence of the student's ability to do satisfactory graduate work, to be determined by the Admissions Committee of the department.

Master's Degree

In this area the Master of Arts, the Master of Science, and the Master of Education degrees are given with specializations in counseling and guidance, educational psychology, school psychology, or special education.

Counseling and Guidance

Students should have a suitable background of course work in a field such as psychology, sociology, or human development and family relationships.

Except with the written approval of the department, the student must be certified prior to completing the master's degree. Prerequisite courses to the graduate program are Psychology 111; Ed. 550 and 552.

Required courses are Ed. 645, 646, 651, 660 (not counted toward total hours), 671, and one or more of the following: Ed. 647, 652; Psychology 640.

Educational Psychology

To be admitted to the program the student must have elementary or secondary certification. In addition to the required graduate courses, he must have completed or must complete six semester hours in basic psychology courses. Prerequisite courses to the graduate program are T.E. 460 and Ed. 550 and 552.

Required courses are Ed. 554, 645, 646, 656, 657, and 660 (not counted towards total hours), and an additional 6 hours decided in consultation with the advisory committee.

School Psychology

(Offered jointly with the Psychology Department.)

To be admitted to this program the student must have completed, or must complete in addition to the specified courses, the following: Ed. 550, 552; Psychology 311, 540, 550; and T. E. 460 or Psychology 445.

Required courses are Ed. 554, 645, 646, 657, 667, 668, 671; Psychology 640 and 740; either Ed. 656 or Psychology 560; and six semester hours of practicum—four in education and two in psychology. (A student majoring in psychology takes four semester hours of psychology and two hours of education practicum.)

Special Education

In this program the student is prepared for work with children having intellectual, motor, or academic handicaps. To be admitted to the graduate program in special education, the student must have a valid teaching certificate plus appropriate experience.

The student must choose a specialization and complete a required sequence of courses. Observation and participation as well as practicum are a required part of each sequence.

Doctoral Degrees

The department offers both the Doctor of Philosophy and the Doctor of Education degrees in educational psychology. These two doctoral programs prepare the candidate to serve in essentially two different capacities. As a result the potential candidate should discuss his goals with the coordinator or some other member in the area before making a definite selection.

Requirements: Full graduate standing in educational psychology is contingent on (1) certification, (2) twelve hours of psychology, of which at least nine must be in basic psychology courses, and (3) compliance with admission requirements of the Graduate School. In addition to these requirements the potential candidate for the Doctor of Education degree must have completed two years of successful professional experience.

Doctor of Philosophy Degree

In completing a doctoral major in educational psychology a candidate will be expected to have competence in each of eight specified areas and to have gained more extensive coverage in at least one of these areas. Basic competence is defined as ability to pass a comprehensive examination covering the eight areas. In general, the examination is drawn from subject matter covered in the following courses:

1. Statistics and research methods: Ed. 552, 554, and 660.
2. Measurement: Ed. 645.

3. Learning: Ed. 656.
4. Counseling and Guidance: Ed. 550 and 646.
5. Human Development and Personality: Ed. 657 and Psychology 450.
6. Special Education: T.E. 460.
7. Psychological and sociological foundations: Psychology 374 and 610, Sociology 512 or 604.
8. Educational foundations: Ed. 601, 675, and one of the following: 631, 636 or 640.

Fields of specialization are the following:

1. Counseling and guidance
2. Human development and personality
3. Learning
4. Measurement
5. Statistics and research methods
6. Special education

The candidate will consult with the chairman of his advisory committee for specific requirements of his specialization.

A student may also be required to take courses in his specific area of interest upon recommendation of his advisory committee. Twelve semester hours of acceptable course work in a related minor and a dissertation must also be completed.

Doctor of Education Degree

The candidate is expected to complete a minimum of 75 semester hours. His program will include the following:

1. A core program: T.E. 460; Ed. 550, 552, 554, 646, 658, 660, 679, 691, 790, and 798.
2. A minimum of 20 semester hours in three supporting fields with not less than 5 hours in any of the three fields.

Suggested courses and supporting fields are the following:

- a. Educational program and its improvement:
Ed. 534 or 626, 636, 639, 642, 675, and 684.
- b. The school and the social order:
Ed. 601, 606; Sociology 512 or 604.
- c. Psychological foundations:
Psychology 378, 550, and 610.
3. The additional hours and other requirements for the fields of specialization—personnel and guidance or special education—will be determined by the student's advisory committee.
4. Completion of a field study dealing with an appropriate problem.

Requirements for Specialization in Areas of Elementary Education and Secondary Education

The department offers course work and training leading to the Master of Education, the Master of Science, and the Master of Arts degrees in the fields of elementary and secondary education. Students entering these programs must give evidence of sufficient background in public school work to enable them to undertake graduate study. Programs in these fields are designed to provide specifically the needs of public school supervisors, directors of curriculum, master teachers in subject specialties, and other school personnel with particular interests in the instructional and curriculum areas. For the complete description of programs and for details regarding requirements, the student should consult the chairman of the department prior to or at the time of application for admission to the Graduate School.

Majors in Elementary Education

Required courses: Ed. 601, 610, 626, 631, 658. 660 is also required in the total program but may not be used to fill either the major or minor requirements.

The balance of the courses must be approved by the student's advisory committee.

Majors in Secondary Education

Required courses: 560 or 658, 601, 610, 636, 639. 660 is also required in the total program but may not be used to fill either the major or minor requirements.

The balance of the courses must be approved by the student's advisory committee.

Graduate Minors in Elementary and Secondary Education

Required courses: (9 to 10 hours) 601, 631 or 636, 626 or 639.

The balance of the courses must be approved by the student's advisory committee.

College Instruction

Courses in Graduate Education, 640, 642, 644, are offered to meet teacher certification requirements for junior colleges in most states. Also, these courses provide advanced training for graduate students in becoming more accomplished and skilled teachers of college and university classes. Instructional tools, teaching materials, and familiarity with newer instructional practices in college teaching are emphasized in the courses.

Graduate Courses in Education

- 514, 515. Analysis of In-Service Problems.** (1-3:1-3:1 ea.) F.S.Su. Staff
- 534. Improved Practices in Elementary Teaching.** (3:3:1) F.Su. Staff
Current concepts in elementary education with observation and analysis of some of the best teaching practices. Designed to meet the needs of persons seeking a refresher course, and for prospective administrative personnel in the elementary schools.
- 547. The Place and Development of Skills in Various Approaches to Reading.** (3:3:0) F.Su. Staff
Detailed consideration of the reading skills developed in kindergarten through grade twelve with emphasis on word analysis; the development of these skills in the various approaches to reading.
- 548. Directed Observation in the Elementary School.** (2:0:4) Staff
Directed observation with elementary school pupils. Required for speech therapists who do not have elementary certificates; recommended for teachers who are recertifying, and others.
- 549. Directed Observation in the Secondary School.** (2:0:4) Staff
Directed observation with secondary school pupils. Required for speech therapists who do not have secondary certificates; recommended for teachers who are recertifying and others.
- 550. Introduction to Guidance Services.** (2:2:0) F.S.Su.
Downing, Egbert, Jensen, Moses
Principles and practices of pupil personnel services in the public schools. Designed for prospective teachers of both elementary and secondary levels. Required but may not be counted as part of the 30 hours for the master's degree by students majoring in this area of specialization.

- 552. Statistical Methods.** (2:2:0) F.Su. Bauer, Egbert
Consideration is given to measures of central tendency, variability, and linear correlation. Elementary concepts of probability and inference are discussed. Required but may not be counted as part of the 30 hours for the master's degree by students majoring in this department.
- 554. Advanced Statistics.** (2:2:0) S.Su. Prerequisite Ed. 552. Staff
- 560. Educational Tests and Measurements.** (3:3:0) S.Su. Harris
Principles of standardized testing in the schools. Construction and use of classroom tests. Consideration also given to evaluation techniques other than testing.
- 563. Problems in the Education of the Visually Handicapped.** (3:3:0) Arr. Pre-requisite: consent of instructor. Staff
- 564. Methods and Materials for Teaching Children With Cerebral Palsy.** (2:2:0) Wilson
Study of specialized methods and materials for teaching children with cerebral palsy and related neurological impairment.
- 566. Problems in the Education of Orthopedically Handicapped Children.** (3:3:0) F.Su. Prerequisite: T.E. 460 Krider, Wilson
- 567. Problems in the Education of Mentally Retarded Children.** (3:3:0) S.Su. Prerequisite: T.E. 460. Krider, Wilson
- 568. Observation and Participation in Special Education.** (2:1:3) F.S.Su. Pre-requisite: consent of instructor. Wilson
- 569. Practicum in Special Education.** (2-4:0:5-10) Prerequisite: consent of instructor. Wilson
- 571. Student Teaching With Deaf Students.** (8:0:40) Prerequisite: consent of instructor. Staff
Practice teaching experience with deaf students in residential or day school classes.
- 573. Workshop for Teachers of Bi-Lingual Children.** (2:Arr.:Arr.) Su. Staff
Study of educational needs, materials, and methods appropriate to the background and language problems of bi-lingual students.
- 601. Comparative Current Educational Philosophy.** (3:3:0) F.S.Su. (m) Alley
- 603. Educational Classics and Contemporary Issues.** (3:3:0) S. (m) Alley, Lloyd
- 606. History of Education in Europe and America.** (4:4:0) F.Su. (m) Staff
- 607. Education in a World Setting.** (2:2:0) S. Lloyd, Romney
- 608. Education in the Social Order.** (2:2:0) S.Su. (m) Ovard
- 610. Development of Instructional Materials.** (Audio-Visual Aids) (2:2:1) F.Su. Prerequisite: T.E. 406 or equivalent.
An advanced course designed to follow T.E. 406.
Principles of learning and the unique contributions of newer instructional media. Of primary concern is the selection, integration, and administration of instructional equipment and materials. Construction and use of specialized materials.
- 611. Radio, Television, and Motion Picture Photography in Education.** (2:2:1) Su. Staff
Utilization in the classroom and in public relations. Current programs, production techniques, recording of programs, and the role of mass media in learning. The development and potential of educational television.
- 612. Supervision of Student Teachers.** (2:2:0) Su. Staff
For those desiring a well-rounded view of the student teaching program.

613. **Teaching Speech in Secondary Schools.** (2:2:0) Su. Staff
616. **Analysis of In-Service Problems.** (1-3:1-3:1) F.Su. Staff
619. **Directing Out-of-Class Activities in Secondary Schools.** (2:2:0) Su. Staff
Examination of successful practices in scheduling and directing out-of-class activities. The effect of current scientific curriculum emphasis on out-of-class activities is explored.
622. **Advanced Study in Childhood Education.** (2:2:0) F.Su. Staff
Educational theory and analysis of current practice in schools as they are related to the significance and problems of early childhood education.
623. **Science in the Elementary School.** (2:2:0) S.Su. Staff
Designed to give experienced teachers insight into the teaching of elementary science. Includes concentration in unit instruction and methods of presenting science concepts to children.
624. **Advanced Arts and Crafts for Elementary Teachers.** (2:2:1) F.Su. Pre-requisite: consent of instructor.
Exploring ideas and materials for the instruction of elementary school children. Attention is given to the specific needs of each course member.
625. **Social Studies in the Elementary School.** (2:2:0) S.Su. Staff
The scope and sequence of the social studies program, its objectives in developing democratic citizenship, and the methods employed in accomplishing this aim.
626. **Methods in the Elementary School—Traditional and Newer Media.** ((2:2:0) S.Su. Staff
Not open to students who have taken Ed. 639.
Assessment of readiness; problems of organizing pupils and faculty for instruction, guiding and pacing; and evaluation.
627. **Teaching Reading in Secondary Schools.** (2:2:0) F.Su. Staff
Methods of teaching reading in the secondary school and their adaptation. Role of the subject-matter specialist in the reading program.
629. **Secondary School Curriculum Workshop.** (2:2:0) Su. Staff
Designed for an analysis of in-service curriculum problems.
Not open to students who have taken Ed. 656.
Designed especially for in-service teachers. Emphasis given to the newer methods, materials, and trends in science and mathematics instruction. Lesson plans developed.
630. **Teaching Mathematics and Science in Secondary Schools.** (2:2:0) Su. Staff
Designed especially for in-service teachers. Emphasis given to the newer methods, materials, and trends in science and mathematics instruction. Lesson plans developed.
631. **Curriculum Development in the Elementary School.** (2:2:0) F.Su. Staff
Not open to students who have taken Ed. 656.
Principles and procedures for organizing the instructional program; patterns of curriculum organization; and techniques for change, evaluation, and stagilization of curriculum.
632. **Reading in the Elementary School.** (2:2:0) F.Su. Staff
An overview of the reading program; comparison of different approaches to the teaching of reading; and word recognition skills studied in greater detail. Opportunities are provided for students to work on their own problems in teaching reading.
633. **Language Arts in the Elementary School.** (2:2:0) F.Su. Staff
Best practices in modern methods of instruction in listening, speaking, reading, and writing with their related skills.

- 634. Arithmetic in the Elementary School.** (2:2:0) S.Su. Staff
Concepts in arithmetic and various activities which will help students acquire correct arithmetical concepts. Special attention on the contributions of research in teaching arithmetic.
- 635. Teaching Social Studies in Secondary Schools.** (2:2:0) S.Su. Staff
Designed to broaden the understanding of curriculum and instruction in secondary school social studies. Relates methods and techniques to the objectives of the social studies.
- 636. Curriculum Development in the Secondary School.** (2:2:0) S.Su. Staff
Not open to students who have taken Ed. 631.
Analysis of secondary curriculum development in terms of psychological and philosophical principles. Curriculum issues, trends, and current practices are examined.
- 639. Methods in the Secondary School—Traditional and Newer Media.** (2:2:0) F.Su. Staff
Not open to students who have taken Ed. 626.
Problems of organizing pupils and faculty for instruction; analysis of methods; patterns of grouping; programmed learning; team teaching.
- 640. Curriculum of the Junior College.** (3:3:0) F.S.Su. Staff
Analysis of junior and community college curriculum practices throughout the United States. Relationship of philosophy to curriculum emphasis. Examination of issues, trends, and current practices.
- 642. Methods of Higher Education Instruction.** (3:3:1) F.S. Staff
Identification of teacher and pupil activities required for conceptual learning at the college level. Appreciation of the college teacher's responsibilities and role as a member of a college staff. Insight into the backgrounds, abilities, interests, and goals of college students and what these mean for instruction. Familiarity with newer tools, teaching materials, and instructional practices.
- 644. Directed Teaching in Higher Education.** (2-4:1-2:5-10) F.S.Su. Pre-requisite: Ed. 642. Staff
Designed to help students become accomplished and skilled teachers of college classes; to participate effectively as a member of a college staff; and to prepare for and complete the steps necessary to be placed into a college position.
- 645. Guidance Testing and Diagnosis.** (3:3:0) F.Su. Prerequisites: Ed. 550, 552.
- 646. Counseling Theory and Practice.** (3:3:0) F.S.Su. Prerequisites: Ed. 550, 552. Downing, Moses, Parker
- 647. Group Techniques for Counselors.** (2:2:0) S.Su. Prerequisites: Ed. 552, 646. Bauer, Downing, Jensen
- 648. Industrial Counseling.** (2:2:0) Arr. Prerequisites: Ed. 550, 646, 651. Staff
- 650. Guidance Workshop.** (2:2:0) Arr. Prerequisite: Ed. 550. Staff
- 651. Informational Services in Guidance.** (3:3:0) S.Su. Prerequisite: Ed. 550. Downing
- 652. Administration of Guidance Services.** (2:2:0) Prerequisite: Ed. 550. Downing
- 653. Student Personnel Services in Higher Education.** (2:2:0) S. Prerequisite: Ed. 550. Lloyd
- 656. Advanced Educational Psychology.** (3:3:1) F.S.Su. Prerequisite: T.E. 403. Bauer, Harris
Principals of human learning. Discussion of major learning theories and their significance for classroom procedures and for general educational theory.

657. **Behavior Problems in the Schools.** (2:2:0) F.S.Su. Prerequisites: T.E. 403, Ed. 550. Bauer, Downing
658. **Educational Tests and Measurements.** (2:2:0) F.Su. Prerequisite: Ed. 552. Bauer, Harris, Moses
659. **Educational and Psychological Principles of Programmed Learning.** (3:3:0) Prerequisite: Psychology 560 or Ed. 656. Bauer, Egbert
660. **Educational Research and Thesis Writing.** (2:2:0) F.S.Su. Prerequisite: Ed. 552. Egbert
662. **Workshop: Curriculum and Methods for the Mentally Retarded.** (2:Arr.) Su. Krider, Wilson
Study of curriculum and methods; the development of materials and teaching aids for the mentally retarded.
663. **Workshop: Curriculum and Methods for the Visually Handicapped.** (2:Arr.) Su. Staff
Study of curriculum and methods; the development of materials and teaching aids for the visually handicapped.
664. **Workshop: Curriculum and Methods for the Gifted.** (2:Arr.) Su. Krider, Wilson
Study of curriculum and methods; development of materials and teaching aids for the gifted.
665. **Diagnostic and Therapeutic Services for the Orthopedically Handicapped.** (2:2:0) Su. Staff
Study of community resources and procedures for the diagnosis of children with orthopedic handicaps and the ancillary therapy and treatment services provided for these children.
666. **Special Education Services in Public Schools.** (2:2:0) Su. only. Staff
667. **Diagnosis of Achievement Difficulties.** (2:2:0) F.Su. Prerequisite: Ed. 645 or 658. Bauer, Harris, Krider
668. **Remedial Teaching Techniques.** (2:2:0) S.Su. Prerequisite: Ed. 667 or consent of instructor. Krider
Remedial procedures applicable to basic subjects with major emphasis in reading.
669. **Guidance and Counseling for the Handicapped.** (2:2:0) F.Su. Staff
671. **Practicum in Testing and Counseling.** (5:2:10) F.S.Su. Prerequisite: consent of instructor. Downing, Jensen, Parker
673. **Practicum in Remedial Teaching.** (2-4:0:5-10) S.Su. Prerequisite: consent of instructor. Staff
674. (670). **Internship in School Psychology.** (2-4:1-2:4-8) S. Prerequisite: consent of instructor. Staff
675. **Organization and Administration of Public Schools.** (3:3:0) F.S.Su. (m) Morrill, Oakes
677. **Public School Finance.** (2:2:0) F.S.Su. (m) Burrup
678. **The Elementary School Principalship.** (2:2:0) F.S.Su. (m) Harms, Morrill
679. **Work of the Secondary School Principal.** (2:2:0) F.S.Su. (m) Burrup
680. **Field Work in Educational Administration.** (3:1:4) F.S.Su. (m) Staff
682. **Personnel Problems of the School Staff.** (2:2:0) F.S.Su. (m) Barnett
683. **Administration of Auxiliary Services.** (2:2:0) F.Su. (m) Barnett
684. **Administration of Pupil Personnel.** (2:2:0) S.Su. (m) Ovard

685. **Supervision of Education.** (2:2:0) F.S.Su. (m) Harms, Moffitt
687. **School Law.** (2:2:0) F.S.Su. (m) Barnett, Burrup, Oakes
- 690, 691. **Seminar.** (2:2:0 ea.) F.S.Su. (m) Staff
- 693, 694. **Independent Readings.** (1-2:3-6:0 ea.) F.S.Su. (m) Staff
698. **Field Project.** (2-4:Arr.:Arr.) F.S.Su. Staff
699. **Thesis for Master's Degree.** (2-4:Arr.:Arr.) F.S.Su. Staff
706. **Objectives and Programs of Continuing Education.** (2:2:0) Su. Alley
709. **Philosophy of Program Planning.** (2:2:0) S. Alley
730. **Evaluation of Educational and Psychological Literature.** (2:2:0) S.Su. Egbert
- 740 (649). **Advanced Counseling Theory.** (2:2:0) S.Su. Prerequisites: Ed. 646; Psychology 550. Parker, Reid
741. **Practicum in Counseling.** (3:1:8) S.Su. Prerequisite: consent of instructor. Staff
745. **Internship in School Psychology.** (2-4:1-2:4-8) Prerequisite: consent of instructor. Moses
Supervised practice in testing, diagnosis, and case work with children in the public schools. Variety of community experiences related to school psychology work.
760. **Problems of Elementary School Administration.** (2:2:0) S.Su. (m) Harms
762. **The Junior High School.** (2:2:0) S.Su. (m) Ovard
763. **The Senior High School.** (2:2:0) F.Su. (m) Ovard
765. **Business Administration of the Public Schools.** (2:2:0) S.Su. (m) Burrup
767. **Research and Survey Procedures in Educational Administration.** (2:2:0) S.Su. (m) Morrill, Oakes
768. **Leadership Functions in Educational Administration.** (3:3:0) F.S.Su. (m) Morrill
770. **Organization and Administration of Continuing Education.** (3:3:0) S.Su. (m) Ovard
771. **College and University Organization and Administration.** (2:2:0) F.Su. (m) Staff
772. **Evaluation and Accreditation of Educational Institutions.** (2:2:0) F.Su. (m) Oakes
773. **Public School Building Programs.** (2:2:0) S.Su. (m) Morrill
775. **Educational Administrative Theory.** (3:3:0) F.S.Su. (m) Oakes
786. **Problems of Taxation and Financial Support of Public Institutions.** (2:2:0) F.Su. (m) Burrup
790. **Seminar: Educational Measurement.** (2:2:0) S.Su. Prerequisite: consent of instructor. Harris, Jensen
791. **Seminar: Learning Theory Applied to Education.** (2:2:0) S.Su. Prerequisite: Ed. 656; Psychology 560. Bauer, Egbert
798. **Field Project for Ed.D. Degree.** (Arr.) F.S.Su. Staff
799. **Dissertation for Ph.D. Degree.** (Arr.) F.S.Su. Staff

Graduate Studies in Religious Instruction

Professors: Belnap, Done, Ludlow, Nibley, Rich, Riddle (chairman, 112 JS), Sperry, Yarn.

Associate Professors: R. L. Anderson, Andrus, Backman, Barron, Clark, Doxey, Larson, Horsley, Turner.

Assistant Professors: Cowan, Shaw.

The Department of Graduate Studies in Religious Instruction has three programs in which master's and doctor's degrees may be obtained. These programs are Bible and Modern Scripture, History of Religion, and Religious Education. A general statement of the requirements for each degree is given below.

Bible and Modern Scripture

In the area of Bible and Modern Scripture programs are offered leading to the Master of Arts and Doctor of Philosophy degrees. A detailed statement of requirements for these degrees may be obtained upon request from the chairman of the Department of Graduate Studies in Religious Instruction. **The responsibility for knowing and fulfilling these requirements as well as the general requirements of the Graduate School rests with the student.**

Master of Arts Degree

After acceptance on a degree-seeking basis, the student must fulfill the following requirements under the direction of his advisory committee:

- A. Attain a minimum of thirty semester hours of credit in approved courses.
- B. Demonstrate proficiency in the scholarly use of one approved foreign language.
- C. Write an acceptable thesis embodying the results of directed research.
- D. Complete successfully an oral examination which will probe the subject-matter of the candidate's major and minor areas of study and the soundness of his thesis.

Doctor of Philosophy Degree

Applicants for the doctorate must demonstrate a proficiency in one tool language and an adequate subject-matter background to be considered for admission to the department on a degree-seeking basis. After acceptance on a degree-seeking basis, the student must fulfill the following requirements under the direction of his advisory committee:

- A. Demonstrate proficiency in the scholarly use of at least two foreign languages.
- B. Attain a minimum of 60 hours of approved course work credit, plus 12 hours of thesis credit. The following "core" courses are required of all students: Graduate Religion 501, 502, 503, 510, 511, 512, 527, 621, and 624.
- C. Pass four four-hour comprehensive examinations demonstrating a thorough mastery of the subject-matter of the student's major and minor fields.
- D. Write an acceptable dissertation embodying the results of original research and constituting a valuable addition to scholarly knowledge.
- E. Complete successfully an oral examination of the scholarship and writing exhibited in the candidate's dissertation.

History of Religion

In the area of History of Religion programs are offered leading to the Master of Arts and Doctor of Philosophy degrees. A detailed statement of requirements for these degrees may be obtained upon request from the chairman of

the Department of Graduate Studies in Religious Instruction. **The responsibility for knowing and fulfilling these requirements as well as the general requirements of the Graduate School rests with the student.**

Master of Arts Degree

After acceptance on a degree-seeking basis, the student must fulfill the following requirements under the direction of his advisory committee:

- A. Attain a minimum of thirty semester hours of credit in the history of religion.
- B. Demonstrate proficiency in the scholarly use of one approved foreign language.
- C. Write an acceptable thesis embodying the results of directed research.
- D. Complete successfully an oral examination which will probe the subject-matter of the candidate's major and minor areas of study and the soundness of his thesis.

Doctor of Philosophy Degree

Applicants for the doctorate must demonstrate a proficiency in one tool language and an adequate subject-matter background to be considered for admission to the department on a degree-seeking basis. After acceptance on a degree-seeking basis, the student must fulfill the following requirements under the direction of his advisory committee:

- A. Demonstrate proficiency in the scholarly use of at least two foreign languages.
- B. Attain a minimum of 60 hours of approved course work credit, plus 12 hours of thesis credit. The following "core" courses are required of all students: Graduate Religion 541, 542, 551, 552, 555, and 556.
- C. Pass four four-hour comprehensive examinations demonstrating a thorough mastery of the subject-matter of the student's major and minor fields.
- D. Write an acceptable dissertation embodying the results of original research and constituting a valuable addition to scholarly knowledge.
- E. Complete successfully an oral examination of the scholarship and writing exhibited in the candidate's dissertation.

Religious Education

The program in Religious Education offers a Master of Religious Education (M.R.E.) and a Doctor of Religious Education (D.R.E.) degree. A detailed statement of requirements for these degrees may be obtained upon request from the chairman of the Department of Graduate Studies in Religious Instruction. **The responsibility for knowing and fulfilling these requirements as well as the general requirements of the Graduate School rests with the student.**

Master of Religious Education Degree

Certification as a teacher on the secondary level is prerequisite to admission for this degree. The student accepted on a degree-seeking basis as a major in Religious Education must fulfill the following requirements under the direction of his advisory committee:

- A. Attain a minimum of 30 semester hours of credit, not including thesis credit. This must include the following requirements:

The following courses:

Graduate Religion 670 (2) (Survey of Religious Education)
Graduate Religion 530 (2) (L.D.S. Theology)

Four hours from the following courses:

Graduate Religion 570 (2), 571 (2), 673 (2), 674 (2) (methods)
Graduate Religion 671 (2), 672 (2), 675 (2), 676 (2) (curriculum)

Eight hours from the following courses:

Graduate Religion 501 (3), 502 (2), 503 (2), 510 (2), 511 (2), 512 (2) (Bible)

Graduate Religion 541 (3), 542 (3) (L.D.S. Church History)

Graduate Religion 621 (3), 622 (3) (Book of Mormon)

An approved minor of at least 9 hours.

B. Write an acceptable thesis or conduct an appropriate field project.

C. Complete in a satisfactory manner an oral examination on the thesis or project report and on the subject matter of the student's major and minor fields.

The master's candidate for a minor in the field of Religious Education will be assigned an adviser to represent this department and must fill the following requirements:

A. The student must complete at least 10 hours of course work as follows:

The following courses:

Graduate Religion 530 (2) (L.D.S. Theology)

Graduate Religion 670 (2) (Survey of Religious Education)

Four hours from the following courses:

Graduate Religion 570 (2), 571 (2), 671 (2), 672 (2), 673 (2), 674 (2), 676 (2)

Two hours from the following courses:

Graduate Religion 541 (3), 542 (3) (L.D.S. Church History)

Graduate Religion 501 (3), 502 (2), 503 (2), 510 (2), 511 (2), 512 (2) (Bible)

Graduate Religion 621 (3), 622 (3) (Book of Mormon)

Doctor of Religious Education Degree

The applicant for this program must have completed two years of successful teaching to be considered for admission. A total of three years' successful teaching is required before the awarding of the degree. The student accepted on a degree-seeking basis as a major in Religious Education must fulfill the following requirements under the direction of his advisory committee:

A. Attain a minimum of 72 semester hours of approved course work credit, plus 12 hours of thesis credit.

1. **Service Courses** (16 hours of course work are required in this area. All starred courses are required.)

Course Title & No.	Hrs.	Course Description
Grad. Rel. 670	2	Survey of Religious Education
570	2	Methods of Teaching Religion in Secondary Schools
571	2	Methods of Teaching Religion in Secondary Schools
673	2	Methods of Teaching Religion in College
674	2	Methods of Teaching Religion in College
671	2	Curriculum of Religion in Secondary Schools
675	2	Curriculum of Religion in College
672	2	Religious Curriculum Building for Secondary Schools
676	2	Religious Curriculum Building for Colleges
Statistics	2-3	*Grad Ed. 554, Psychology 670, Sociology 524, or an approved course from the Statistics Department
Grad. Ed. 675	3	Organization and Administration
656	2	Advanced Educational Psychology
646	3	*Counseling
647	2	*Group Techniques for Counselors
H.D.F.R. 667	2	Problems of Teaching Marriage and Family Relationships

2. **General Studies** (16 hours of course work are required in this area. All starred courses are required.)

Course Title & No.	Hrs.	Course Description
Grad. Rel. 541,542	6	Documents of L.D.S. Church History
551 or 552	2	Ancient Christian History
654	2	Reformation and Counter-Reformation
657 or 658	2	Comparative Studies in American Religion
Psych. 654	3	*Psychology of Religion
Socio. 516	2	*Sociology of Religion
Grad. Rel. 555 or 556	2	World Religions
Pol. Sci. 601	2	*Modern Political Philosophy

3. Scripture Courses (22 hours of course work are required in this area.)

Course Title & No.	Hrs.	Course Description
Grad. Rel. 501,502,503	7	Old Testament
510,511,512	6	New Testament
621,622	6	Book of Mormon
624,625	6	Doctrine and Covenants
527	3	Pearl of Great Price

4. Scientific Disciplines (18 hours of course work are required in this area. All starred courses are required.)

Course Title & No.	Hrs.	Course Description
Phil. 381,382	4	Systems of Thinking (deductive and inductive procedures)
470,471	6	History of Philosophy
473,594	4	*Scientific Methodology
483	2	*Epistemology
591	2	Seminar in Philosophical Analysis
Theol. 435	2	*Problems in Science and Religion

B. Demonstrate competence in the four areas of emphasis in the course work by passing a comprehensive examination in each area.

C. Write an acceptable dissertation embodying the results of original research, or, execute a field project in religious education.

D. Complete successfully an oral examination of the thesis or field project report.

Graduate Religion Courses

(Note: Courses where the semester is not designated are specialized offerings given on demand.)

501. **Analysis of the Old Testament: The Pentateuch and Historical Books.** (3:3:0) F.Su. Rasmussen, Sperry
502. **Analysis of the Old Testament: Prophetic Books.** (2:2:0) S.Su. Rasmussen, Sperry
503. **Analysis of the Old Testament: Poetic and Wisdom Literature.** (2:2:0) S.Su. Rasmussen, Sperry
510. **The Gospels.** (2:2:0) F.Su. Anderson, Sperry, Turner
511. **Paul's Life and Letters.** (2:2:0) F.Su. Anderson, Sperry, Turner
512. **The General Epistles and the Apocalypse.** (2:2:0) S.Su. Anderson, Sperry, Turner
513. **New Testament Times.** (2:2:0) S.Su. Anderson, Sperry
527. **History and Doctrines of the Pearl of Great Price.** (3:3:0) F.Su. Andrus, Clark
530. **L.D.S. Theology.** (2:2:0) F.Su. Riddle, Turner
541. **Documents of L.D.S. Church History.** (3:3:0) F.Su. Andrus, Backman, Clark, Larson, Rich
542. **Documents of L.D.S. Church History.** (3:3:0) S.Su. Andrus, Backman, Clark, Larson, Rich

545. **Great Figures of L.D.S. Church History.** (2:2:0) Barrett
Biographical study of significant L.D.S. Church personalities of the first half century of the restoration.
546. **Social, Economic, and Political Thought of Joseph Smith.** (2:2:0) Andrus
551. **The Primitive Church.** (2:2:0) F. Nibley
552. **Christianity in the Second and Third Centuries.** (2:2:0) S. Nibley
553. **Great Figures in Christian History.** (2:2:0) Staff
Biographical study of significant Christian personalities and their contribution to Christianity from Paul to Joseph Smith.
554. **Martin Luther, Forerunner of the Restoration.** (2:2:0) Staff
Luther's life, theology and influence upon Protestant Christianity, with special emphasis upon the significance of Luther for Mormonism.
555. **Comparative World Religions.** (2:2:0) F.Su. Palmer
Hinduism, Jainism, Sikhism, Buddhism.
556. **Comparative World Religions.** (2:2:0) S.Su. Palmer
Taoism, Confucianism, Shintoism, Judaism, Zoroastrianism, and Islam.
558. **Christian Rites and Liturgy.** (2:2:0) Nibley
559. **History of Christianity in Asia.** (2:2:0) F. Palmer
- 570, 571. **Methods of Teaching Religion in Secondary Schools.** (2:5:0 ea.) Su. Berrett, Staff
- 591, 592. **Biblical Hebrew.** (5:5:0 ea.) F.S. Meservy, Rasmussen
A beginning course in the classical Hebrew of the Old Testament. Valuable for student and teachers as a tool for interpreting and appreciating the Bible. (See Hebrew offerings in the Language Department.)
- 593, 594. **Hebrew Grammar and Selected Readings.** (3:3:0) F.S. Prerequisite: Graduate Religion 591, 592 or equivalent acquaintance with Hebrew. Meservy, Rasmussen
601. **History of the Hebrews.** (3:3:0) F. 1963. Sperry Rasmussen
604. **The Literature of the Old Testament.** (2:2:0) S. 1964. Sperry, Rasmussen
605. **Canon and Text of the Old Testament.** (2:2:0) F. 1964. Sperry
606. **The Apocrypha and Pseudepigrapha.** (2:2:0) S. 1965. Sperry
607. **Religion of the Old Testament.** (2:2:0) F. Nibley
608. **Cultural and Religious Patterns of the Ancient Near East.** (2:2:0) S. Sperry
610. **Early Christian Literature.** (2:2:0) Anderson
611. **Formation of the New Testament: Text and Canon.** (2:2:0) Sperry
612. **Textual Criticism of the New Testament.** (2:2:0) Anderson
621. **Analysis of the Book of Mormon. (Doctrinal)** (3:3:0) F.Su. Ludlow, Sperry
622. **Analysis of the Book of Mormon. (External Evidence)** (3:3:0) S.Su. Ludlow, Sperry
624. **Analysis of the Doctrine and Covenants.** (3:3:0) F.Su. Andrus, Doxey
625. **Analysis of the Doctrine and Covenants.** (3:3:0) S.Su. Andrus, Doxey
627. **Seminar: Pearl of Great Price.** (2:2:0) S. Andrus, Clark

- 641, 642. **Special Problems in L.D.S. Church History.** (2:2:0 ea.)
Andrus, Backman, Larson, Rich
- 645, 646. **Historical Development of L.D.S. Doctrine and Practices.** (2:2:0 ea.)
Andrus, Backman, Larson, Rich
653. **History of the Papacy.** (2:2:0) F. Horsley
654. **Reformation and Counter-Reformation.** (2:2:0) S. Horsley
- 657, 658. **Comparative Studies in American Religions.** (2:2:0 ea.) F.S.
Backman
659. **American Religious Thought.** (2:2:0) Staff
660. (Was Hist. & Phil. of Rel. 691). **Seminar in History of Asian Religion.**
(2:2:0) S. Palmer
670. **Survey of Religious Education.** (2:2:0) S. Belnap
671. **Curriculum of Religion in Secondary Schools.** (2:5:0) Su. Berrett, Staff
672. **Religious Curriculum Building for Secondary Schools.** (2:5:0) Su. Pre-
requisite: Graduate Religion 671. Berrett, Staff
- 673, 674. **Methods of Teaching Religion in College.** (2:5:0 ea.) Su.
Berrett, Staff
675. **Curriculum of Religion in College.** (2:5:0) Su. Berrett, Staff
676. **Religious Curriculum Building for Colleges** (2:5:0) Su. Prerequisite: Grad-
uate Religion 675. Berrett, Staff
677. **Problems of Teaching Religion.** (1:3:0) Berrett, Staff
680. **Philosophic Problems and Religious Instruction.** (1:3:0) Su. Riddle, Yarn
690. **Studies in the Hebrew Old Testament.** (3:3:0) Prerequisite: Two years of
Hebrew or consent of instructor. Meservy, Sperry, Rasmussen
691. **Studies in Hebrew.** (3:3:0) Prerequisite: Graduate Religion 690.
Meservy, Sperry, Rasmussen
- 693, 694. **Biblical Aramaic and the Targums.** (2:2:0 ea.) Prerequisite: At least
one year of Biblical Hebrew. Meservy, Sperry
699. **Thesis for Master's Degree.** (1-6:Arr.:Arr.) Staff
709. **Seminar: Old Testament.** (2:2:0) Sperry
710. **Seminar: New Testament.** (2:2:0) Anderson
711. **Readings in Greek: The Gospel and Acts.** (3:3:0) Prerequisite: Ability to
pass departmental examination in Greek. Nibley
712. **Readings in Greek: Paul's Letters.** (3:3:0) Prerequisite: Ability to pass
departmental examination in Greek. Nibley
713. **Readings in Greek: General Epistles and the Apocalypse.** (3:3:0) Pre-
requisite: Ability to pass departmental examination in Greek. Nibley
721. **Seminar: Book of Mormon.** (2:2:0) Ludlow, Ricks, Sperry
724. **Seminar: Doctrine and Covenants.** (2:2:0) Andrus, Doxey
728. **Readings in Modern Scripture.** (1-2) Andrus
748. **Readings in L.D.S. Church History.** (1-2:1-2:0)
Andrus, Backman, Larson, Rich
758. **Readings in Christian History.** (1-2:1-2:0) Nibley

759. **Readings in the History of World Religions.** (1-2:1-2:0) Nibley
791. **Syriac.** (5:5:0) Prerequisite: Two years Biblical Hebrew or one year Aramaic. Meservy, Sperry
792. **Syriac.** (3:3:0) Prerequisite: Graduate Religion 791. Meservy, Sperry
- 793, 794. **Akkadian.** (2:2:0 ea.) Prerequisite: Two years Biblical Hebrew. Meservy, Sperry
- 797, 798. **Ugaritic.** (3:3:0) Prerequisite: Two years Biblical Hebrew. Meservy
The alphabet, vocabulary, and grammar of the language of the Ras Shamra tablets. Valuable for its parallels to Biblical Hebrew.
799. **Doctoral Dissertation.** (1-6) Staff

Health and Safety Education

Professors: Geddes, Hart, Nicholes, Watters (chairman, 220 SFH).

Requirements

Plan "A"

The basic requirements for the Master of Science degree in health education are the same as the general Graduate School requirements. In addition, an oral examination is administered to each student early in the first semester. The purpose of the examination is to give guidance in the courses and studies leading to the master's degree. Recommended courses are set up after consultation with the college graduate chairman and the major chairman. Thesis required.

Plan "B"

1. An undergraduate major or equivalent and acceptance by the department chairman are required for admission. The student must successfully complete a written and oral examination before acceptance as a full degree-seeking student.
2. The candidate will complete the same general requirements as all other masters degree candidates with the following exceptions:
 - A. The candidate will complete not less than 32 semester hours of credit approved by his advisory committee, not less than 18 hours will be taken in his major field, and not less than 9 hours in an approved minor field or not more than 12 hours in 2 or more supporting fields.
 - B. The candidate will not be required to write a thesis.
 - C. (1) The course Education 552, Statistical Methods (2:2:0) or its equivalent will be required the first term of residence as a prerequisite to a methods of research class.
 - (2) A course, Methods in Research (3:3:0), will be required the first or second term of residence. In this class the candidate must complete a research project using the recommended thesis form for approval by the instructor and the graduate committee chairman.
 - D. The candidate will also be required to work with the Utah County Public Health Department on a specific practical problem of Community Health.
3. The candidate must pass a final written examination related to the major course work taken.
4. The candidate must pass a final oral examination conducted by the graduate faculty members from the major, minor, or supporting fields.

Graduate Courses

- 501. Health Education Workshop.** (1-2:Arr.:0) F.S.Su. Staff
Intended primarily for extension credit and/or summer school. Involves a presentation of health education problems followed by discussions. Conducted on a workshop basis.
- 521. Evaluation and Selection of School Health Material.** (2:2:0) F. Staff
Pamphlets, brochures, films, textbooks, and other school health resource materials are evaluated and selected for present and future use.
- 530. First Aid Instructor.** (2:2:1) F. Watters
Designed to qualify instructors in Red Cross first aid, so that they may conduct classes to qualify individuals for standard and advanced Red Cross cards.
- 551. Field Work in Community Health.** (2:Arr.:Arr.) S. Prerequisite: Health 451. Staff
Designed to broaden the understanding of community health agencies, their roles, programs, and relationships. Accomplished by field introductions to the various official and voluntary health agencies followed by the selection of agencies in which to do field work during the semester.
- 552. School Health Services.** (2:2:0) S. Staff
Considers desirable school health services and functions and relationships to public education and education law. Coordinates school health services with community programs.
- 560. Stimulants and Depressants.** (2:2:0) F. Nicholes
The physiology and biological chemistry of stimulants and depressants.
- 561. Health of the Body Systems.** (3:3:0) S. Prerequisite: Zoology 365 or equivalent. Nicholes
- 691. Graduate Seminar.** (0:Arr.:Arr.) F.S.Su. Staff
A seminar for graduate students in Health and Safety Education. Reviews course work, testing procedures, professional agencies, and current trends in health education.
- 693. Research in Health Sciences.** (2:1:2) F.S. Staff
Independent and/or directed research in problems associated with the health sciences. Gives credit to graduate students involved in directed or independent research from grant-in-aid, fellowship, or contract grant support.
- 694. Seminar in Readings.** (2:2:0) S.Su. Staff
- 696. Seminar in Problems.** (1:1:0) F.Su. Staff
- 698. Field Project.** (1-4:Arr.:Arr.) S. Staff
- 699. Thesis for Master's Degree.** (1-6:2-5:0) F.S.Su. Staff

Courses outside the major field and considered as direct support of the major in health and safety education are as follows:

Bacteriology 121. General Bacteriology. (3:2:3)

or

Bacteriology 331. Microbiology. (5:3:6)

Bacteriology 311. Sanitation and Public Health. (2:2:0)

Bacteriology 371. Dairy Microbiology. (2:1:3)

Bacteriology 391. Clinical Pathology. (2:1:3)

Bacteriology 501. Pathogenic Microbiology. (5:3:6) (Bact. 331, Prerequisite)

- Bacteriology 502. Pathogenic Microbiology. (2:1:3)
- Bacteriology 511. Immunology. (4:2:6)
- Bacteriology 551. Advanced Microbiology. (3:3:0)
- Bacteriology 611. Advanced Immunology. (2:2:0)
- Botany 376. Genetics. (3:3:0) (Botany 101 or Zoology 105, prerequisite)
- Botany 377. Secondary Teaching Procedures in Biology. (3:3:1)
- Chemistry 101, 102. Introductory Chemistry. (5-4:5:4-2 ea.)
or
- Chemistry 105, 106. General College Chemistry (4:4:2)
or
- Chemistry 111. Principles of Chemistry. (4:5:0)
or
- Chemistry 580. Metabolic Processes. (2:2:0)
- Education 550. Introduction to Guidance Services. (2:2:0)
- Education 552. Statistical Methods. (2:2:0)
- Education 646. Counseling Theory and Practice. (3:3:0)
- Education 709. Philosophy of Program Planning. (2:2:0)
- Food and Nutrition 115. Essentials of Nutrition. (2:2:0)
- Food and Nutrition 635. Advanced Human Nutrition. (3:3:0)
- Food and Nutrition 675. Recent Advances in Nutrition. (2:2:0)
- Food and Nutrition 695. Methods of Research in Nutrition. (2:1:4)
- Geography 580. Geography of Underdeveloped Areas. (2:2:0)
- H.D.F.R. 510, 511. Advanced Child Development. (3:3:0)
- H.D.F.R. 580. Introduction to Marriage and Family Counseling. (2:2:0)
- Physical Education 344. Physiology of Activity. (3:3:0)
- Physical Education 542. Physical Inspection. (1:1:0)
- Physical Education 543. Problems in Athletic Conditioning and Injuries. (2:1:2)
- Physical Education 603. Planning Facilities. (2:2:0)
- Physical Education 641. Principles and Practices of Physical Reconditioning. (2:2:0)
- Physical Education 660. Measurement and Evaluation in Physical Education and Health Education. (3:3:0)
- Physical Education 691. Seminar in Administration and Public Relations. (3:3:0)
- Physical Education 692. Research Methods in Health, P.E., and Recreation. (3:3:0)
- Physical Education 694. Seminar in Readings. (2:2:0)
- Psychology 185. Physiological Psychology. (2:2:0)
- Psychology 321. Psychology of Adolescence. (2:2:0)
- Psychology 340. Mental Hygiene. (2:2:0)
- Psychology 445. Exceptional Children. (2:2:0)

- Psychology 540. **Abnormal Psychology.** (3:3:2)
- Sociology 580. **'Social Relations in Medical Health Organizations.** (2:2:0)
- Psychology 585. **Advanced Physiological Psychology.** (3:3:0)
- Recreation 505. **Adminstration of Community Recreation.** (3:3:0)
- Recreation 609. **The Recreation Program.** (2:2:0)
- Sociology 449. **Community Organization, Action, and Planning.** (2:2:0)
- Speech 545. **Public School Audiometry.** (2:2:2)
- Zoology 261. **Human Anatomy and Physiology.** (4:2:4)
- Zoology 365. **Animal Physiology.** (4:2:4)
- Zoology 376. **Genetics.** (4:3:3)
- Zoology 662. **Advanced Physiology.** (2:1:2)

History

Professors: Campbell (chairman, 336 Maeser), Hafen, Poll, Swensen.
Associate Professors: Addy, Hyer, Jensen.
Assistant Professor: Warner.

Requirements

The Department of History offers work leading to the Master of Arts and Doctor of Philosophy degrees.

A student undertaking work toward a graduate degree in history is expected to offer an undergraduate major in the subject, or its equivalent. He is expected to complete, outside his graduate degree program, any courses which are specifically listed in the undergraduate major program of this University which he has not already taken. In addition to the documents required by the University for admission to degree-seeking status, the prospective student is asked to provide the department with a term paper or comparable example of his undergraduate written work in history. Unless he has already taken the departmental senior comprehensive examination as an undergraduate, he may be asked to take it prior to admission to degree-seeking status; in either case a grade of "B" is ordinarily prerequisite for such admission. Where remediable deficiencies in preparation are believed to exist, the department may prescribe undergraduate course work as a condition of admission.

Master's Degree

The requirements for a Master of Arts degree in history are the general requirements of the Graduate School.

Doctor of Philosophy Degree

The requirements for a Doctor of Philosophy degree in history include the general University regulations on minimum full-time study, time limit, committee supervision, and language proficiency of the Graduate School, with these additional provisions:

At least two semesters of the required full-time study at Brigham Young University must be consecutive.

Upon completion of the Master's degree or at the end of the first year of graduate study, the student must obtain the approval of the department to continue study toward the doctorate degree.

Course Requirements. Course work in the following areas must be completed:

Historiography and methods of historical research

Methods of teaching history in college

A course in the 600 series in each of the fields offered for examination

Subject Examinations. When, in the opinion of the advisory committee, the student is ready, and in no case earlier than the beginning of the second year of graduate study, he may take the subject examinations in the following sequence:

Written Examinations: The student is required to show familiarity with fundamental historiography and with the basic structure and developments in (1) the area of major emphasis and research, (2) three additional areas of history, and (3) a related area offered in a department other than history. Both hemispheres must be represented in the history areas chosen. The areas of history are these:

Ancient History

Medieval History

Early Modern European History (1500-1815)

Modern European History (1789-present)

Latin American History

History of Asia

United States History (to 1865)

United States History (since 1865)

Western American History

Oral Examination: The oral examination, which must be taken not less than six months prior to the awarding of the degree, deals intensively with the factual structure, major concepts and interpretations, and bibliography in the field of major emphasis and research, and reviews also the additional areas of history and the related outside area.

All the written examinations must be satisfactorily completed before the oral examination may be taken. In the event of failure any examination may be repeated once, no less than one semester after the unsatisfactory performance. Successful completion of the subject examinations is the basis for advancement to candidacy for the doctor's degree.

Dissertation. The student must present a dissertation which represents an original contribution to historical knowledge and which shows ability to use sources in a discriminating way. In a final oral examination he is tested on the historical setting, subject, and methods of the dissertation, and is expected to defend its conclusions.

Graduate Courses

In the Department of History courses in the 500 series provide systematic coverage of rather broad areas of subject matter through text and library readings, lectures, reports, and class discussions. Students who have not completed the relevant courses from among History 110, 111, 120 and 121 should obtain permission of the instructor before enrolling in any of these courses.

- | | | |
|---|---------------------------------------|---------|
| 512. Medieval Thought and Culture. (3:3:0) | (Offered 1963-64 and alternate years) | Swensen |
| 520. Eighteenth Century Europe. (2:2:0) | (Offered 1963-64 and alternate years) | Addy |
| 522. Nineteenth Century Europe. (2:2:0) S. | (Offered 1964-65 and alternate years) | Addy |
| 525. European Diplomatic History since 1815. (2:2:0) F. | (Offered 1964-65 and alternate years) | Jensen |
| 528. Modern European Thought and Culture. (2:2:0) F. | | Jensen |
| 548. Culture of Asia. (2:2:0) | (Offered 1963-64 and alternate years) | Hyer |
| 562. American Westward Movement to 1825. (3:3:0) F. | | Hafen |

563. **American Westward Movement after 1825.** (3:3:0) S. Hafen
572. **American Revolution and the Confederation.** (2:2:0) F. Backman
575. **The New Nation, 1787-1815.** (2:2:0) (Offered 1963-64 and alternate years) Campbell
576. **Jacksonian America.** (2:2:0) (Offered 1963-64 and alternate years) Staff
577. **Civil War and Reconstruction.** (2:2:0) F. (Offered 1964-65 and alternate years) Poll
578. **American Industrial Revolution.** (2:2:0) S. (Offered 1964-65 and alternate years) Poll
585. **Historical Geography of United States.** (2:2:0) S. (Offered 1964-65 and alternate years) Staff

In the Department of History courses in the 600 series, excepting seminars, develop selected problems within the general areas of the course titles through extensive library reading, reports, and class discussions. Seminars require each participant to produce a substantial research paper. Seniors who have completed all of the specifically required courses for the undergraduate major may enroll in these courses with the permission of the instructor.

606. **Greek Thought.** (2:2:0) (Offered 1963-64 and alternate years) Swensen
618. **Renaissance and Reformation.** (2:2:0) (Offered 1963-64 and alternate years) Jensen
621. **Modern Europe.** (2:2:0) S. (Offered 1964-65 and alternate years) Jensen
640. **The Far East.** (2:2:0) F. (Offered 1964-65 and alternate years) Hyer
650. **Latin America.** (2:2:0) (Offered 1963-64 and alternate years) Addy
656. **Southwestern United States.** (2:2:0) (Offered 1963-64 and alternate years) Hafen
667. **Northwestern United States.** (2:2:0) F. (Offered 1964-65 and alternate years) Hafen
670. **Colonial America.** (2:2:0) F. (Offered 1964-65 and alternate years) Bushman
679. **Contemporary United States History.** (2:2:0) (Offered 1963-64 and alternate years) Poll
694. **Seminar in European History.** (2:2:0) S. Staff
695. **Seminar in Western American History.** (2:2:0) F. Staff
696. **Seminar in United States History.** (2:2:0) S. Staff
697. **Seminar in Utah History.** (2:2:0) F. Staff
698. **Special Readings in History.** (1-2:0:Arr.) F.S.Su. Staff
699. **Thesis for Master's Degree.** (1-4:0:Arr.) F.S.Su. Staff
799. **Dissertation for Doctor's Degree.** (1-4:0:Arr.) F.S.Su. Staff

These courses also count in history:

- Political Science 557. **Government and History of Canada.** (3:3:0)
- Political Science 571. **American Foreign Policy.** (3:3:0)
- Political Science 595. **American Constitutional Development.** (2:2:0)

Industrial Education

Professors: Jeppsen, Loveless, McArthur (chairman, 221 SIE).

Requirements

The basic requirements for the Master of Science degree in industrial education are those specified by the Graduate School. In addition the department requires the following:

- (a) Satisfactory completion of 12 semester hours of industrial and technical undergraduate courses prior to or concurrent with the graduate work, or a minimum of 6 years of bonafide trade experience.
- (b) Satisfactory completion of a qualifying examination given by the Industrial Education Department.

Through consultation with his adviser, a program of study is set up from courses in the major and related fields which shall include 18 or more semester hours in the major area and 10 or more semester hours in the minor area.

Graduate Courses

- 510. History and Trends in Industrial and Technical Education.** (2:2:0) F.Su. McArthur
Historical developments of industrial and technical education programs from their early beginnings to the present time.
- 515. Principles and Objectives of Industrial and Technical Education.** (2:2:0) F. Su. McArthur
General philosophy, principles, and objectives of industrial arts, vocational education, and technical education programs.
- 520. Analysis in Industrial and Technical Education.** (2:2:0) F.Su. Prerequisite: I.E. 515 or approval of instructor. Loveless
Basic principles involved in analyzing industrial and technical occupations for determining functional teaching content.
- 525. Course Construction in Industrial and Technical Education.** (2:2:0) S.Su. Prerequisite: I.E. 520 or approval of instructor. Jeppsen
Preparation and use of a course of study in industrial and technical fields based upon an analysis of the occupation.
- 540. Industrial Occupational Information and Guidance.** (2:2:0) S.Su. McArthur
Designed to provide teachers and administrators of industrial and technical education programs with information and processes needed in advising students in the industrial and technical fields of employment.
- 594, 595. Problems in Industrial and Technical Education.** (1-3:1-3:3-6 ea.) F.S. Su. Staff
Designed to strengthen the student in a given area of instruction provided in the industrial education program.
- 690, 691. Seminar in Industrial and Technical Education.** (1:1:0 ea.) Su. Staff
Latest developments and research findings in the field of industrial and technical education are reviewed.
- 693, 694. Reading and Conference.** (1-3:1-3:0 ea.) F.S.Su. McArthur
- 699. Thesis for Master's Degree.** (Arr.) F.S.Su. McArthur

These courses also count in industrial education:

Education 552. Statistical Methods. (2:2:0)

Education 560. Tests and Measurements for Classroom Teachers. (2:2:0)
or

Education 658. Educational Tests and Measurements. (2:2:0)

Education 660. Educational Research and Thesis Writing. (2:2:0)

Institute of Government Service

Professor: Grow (director, 356 McK).

The Institute of Government Service offers graduate studies leading to the master's degree in the fields of Public Administration and International Affairs. The aim of the program is to provide training for those students who wish to prepare for service in local, state, federal, or international governmental activities, international trade, or who plan further advanced graduate work in public administration for the purpose of teaching.

Administration of the Program

The program is administered by the director of the Institute of Government Service. Program policy is formulated by the director and an advisory committee composed of the chairman or representative of the departments of Political Science, History, Language, Sociology, Psychology, Economics, Geography, and English. Changes in the program shall be on approval of the Graduate Council.

Entrance Requirements

To be admitted, an applicant must possess the bachelor's degree from an accredited university and meet the requirements of Brigham Young University for admission to graduate study. Students may be admitted from a variety of backgrounds. Those who have majored or minored in political science, economics, history, psychology, business, geography, languages, or engineering will generally possess good training. When application for admission is made, each applicant will be advised of any background shortages which will need to be overcome.

Each student admitted will either be personally interviewed or his credits given close scrutiny to assess his educational background, his work experience, and his future goals. A program will then be outlined which will remedy any background shortages and provide advanced training leading to the master's degree. Entering students will be required to have adequate preparation in such fields as national history, national government, or basic economics. If the student lacks such background, he will be required to take lower division background courses which will not be counted toward the master's degree. Students entering with a background of education in the United States will be required to have or to take the equivalent of History 120 and 121, Political Science 110, and Economics 101. Foreign students will be required to have equivalent history and political science courses relating to their own countries and similar training in economics.

Requirements for the Degree

The master's degree requires the completion of 30 or more semester hours of acceptable graduate credit under the direction of an advisory committee which will normally be composed of faculty from two or more departments. A thesis is required which may carry up to six hours credit which will be counted in the total hour requirement. The student will be required to comply with all graduate requirements set forth in the graduate catalog with the exception that in place of the traditional major and minor, credit may be distributed in accordance with the plans outlined below.

PROGRAM A. State and Local Governments. Students specializing in this area will be required to have background indicated plus Political Science 111 or its equivalent and to take 30 or more hours selected in conjunction with the director of the Institute of Government Service or the student's advisory committee from the following courses or their equivalents:

- Political Science 310. Political Parties, Pressure Groups, and Public Opinion in the U.S. (3 hours)
- Political Science 320. American Legislative System (2 hours)
- *Political Science 330. Introduction to Public Administration (3 hours)
- Political Science 501. City Planning (3 hours)

- Political Science 502. Public Works and Safety Administration (3 hours)
- Political Science 504. Budget and Fiscal Administration (3 hours)
- Political Science 532. Personnel Administration (2 hours)
- *Political Science 535. Municipal Government and Administration (3 hours)
- Geography 522. Urban Geography (3 hours)
- Bacteriology 311. Sanitation and Public Health (or 321)
- Economics 461. Labor Problems and Labor Relations
- Economics 575. Government Finance (3 hours)
- Sociology 316. Social Control
- Sociology 380. Criminology
- Sociology 426. Sociology of Urban Life
- Sociology 449. Community Organization, Action, and Planning (3 hours)
- Statistics 221. Principals of Statistics (3 hours)
- Sociology 320. Social Statistics
- Journalism 561. Public Relations (3 hours)
- Psychology 336. Personnel Psychology—Theory and Practice
- *Psychology 357. Group Relations and Leadership
- Psychology 370. Elementary Statistics

PROGRAM B: National Government. Students specializing in this area will be required to take 30 or more hours selected in conjunction with the director of the Institute of Government Service and the student's advisory committee from the following courses or their equivalents:

- Political Science 306. American Political Thought (2 hours)
- Political Science 310. Political Parties, Pressure Groups, and Public Opinion in the United States
- Political Science 320. American Legislative System
- *Political Science 330. Introduction to Public Administration (3 hours)
- Political Science 350. Government of the Soviet Union and Eastern Europe (3 hours)
- Political Science 355. Government and Politics of United Kingdom and the Commonwealth (3 hours)
- Political Science 396. Constitutional Law
- Political Science 397. Constitutional Law
- Political Science 504. Budget and Fiscal Administration (3 hours)
- Political Science 532. Personnel Administration (2 hours)
- Political Science 593. Administrative Law of the U.S. (3 hours)
- Economics 345. Intermediate Economic Analyses
- Economics 430. Economic Development
- Economics 575. Government Finance (3 hours)
- Economics 576. Government and Business (3 hours)
- English 361. Early American Literature (3 hours)
- English 362. Later Nineteenth Century American Literature.
- Geography 441. Political Geography (3 hours)
- History 379. U.S. in 20th Century
- History 679. Contemporary United States (2 hours)
- Journalism 561. Public Relations (3 hours)
- Psychology 336. Personnel Psychology: Theory and Practice (3 hours)
- Sociology 420. Population Problems (3 hours)
- Sociology 426. Urban Sociology
- *Sociology 357. Group Relations and Principles of Leadership

PROGRAM C: International Affairs. Students specializing in this area will be required to have background indicated above plus Political Science 112 or 115 or their equivalent and take 30 or more hours selected in conjunction with the director of the Institute of Government Service and the student's advisory committee from the following courses or their equivalent:

- Political Science 303. Modern Western Political Thought (3 hours)
 Political Science 306. American Political Thought (2 hours)
 *Political Science 330. Introduction to Public Administration (3 hours)
 Political Science 350. Government of the Soviet Union and Eastern Europe (3 hours)
 Political Science 352. Government and Politics of East Asia (2 hours)
 Political Science 355. Government and Politics of United Kingdom and the Commonwealth (3 hours)
 Political Science 560. Governments of Latin-America (2 hours)
 Political Science 565. International Organization (3 hours)
 Political Science 571. Development of American Foreign Policy (3 hours)
 Political Science 572. Soviet Foreign Policy (2 hours)
 Political Science 575. International Law (5 hours)
 *Sociology 357. Group Relations and Principles of Leadership
 Sociology 420. Population Problems.
 Economics 274. Economics and Financial History of the U.S. (3 hours)
 Economics 345. Intermediate Economics
 Economics 358. International Trade and Finance (3 hours)
 Economics 383. Comparative Economic Systems (3 hours)
 Economics 575. Government Finance (3 hours)
 Economics 580. History of Economic Thought (3 hours)
 English 355. World Classics (3 hours)
 English 356. World Classics (3 hours)
 English 357. World Classics (3 hours)
 English 358. World Classics (3 hours)
 English 550. The Criticism and Appreciation of Literature (3 hours)
 English 582. Shakespeare (3 hours)
 Geography 441. Political Geography (3 hours)
 Geography 455. Latin America (3 hours)
 Geography 552. United States (2 hours)
 Geography 561. Western Europe and the Mediterranean (2 hours)
 Geography 562. U.S.S.R. and Its Satellites (2 hours)
 Geography 571. Orient (2 hours)
 *History 323. Europe in the Twentieth Century (2 hours)
 History 330. Russia Before 1900 (2 hours)
 History 331. Russia since 1931 (2 hours)
 History 335. England (3 hours)
 *History 340. Asia (3 hours)
 History 348. Cultural Asia (2 hours)
 History 352. Latin America (3 hours)
 History 379. U.S. in the 20th Century
 History 525. European Diplomatic History since 1815
 History 548. Cultural Asia (2 hours)
 *History 679. Contemporary United States History (2 hours)
 *Languages. Advanced preparation will develop the foreign language to a level approximating the Foreign Service Requirement.
 Anthropology 241. Growth of Culture in the Old World
 Anthropology 246. Growth of Culture in the New World
 Anthropology 552. Personality, Culture and Society

*Required courses.

Journalism

Professor: Smith (chairman, 160 SSC).

Requirements

The Department of Journalism offers work leading to the Master of Arts degree with programs of individual students arranged to provide concentrations

in areas of special interest. Special emphasis is given to programs in research, advertising-public relations, and teaching journalism in the secondary school and junior college.

Prospective majors are advised to consult the chairman of the department concerning background for graduate study in this field. Competence demonstrated in a qualifying examination or appropriate undergraduate courses may be required of students deficient in academic preparation or practical experience.

Students desiring to complete a graduate minor in journalism should consult the chairman of the department regarding a recommended program of study.

Graduate Courses

- 561. Public Relations.** (3:3:0) F.Su. Butterworth, Smith
Philosophy and practice of public relations in business, governmental, educational and other institutions; study of publics, media, and methods. Case studies of public relations practice.
- 563. Projects in Public Relations.** (1:0:3) F.S.Su. Butterworth
Field projects in public relations practice for selected business, industrial, or non-profit institutions. (Limited to majors and minors.)
- 566. Industrial Magazine Editing and Production.** (2:2:0) S. Prerequisites: Journalism 211, 250. Burnett
Principles of layout and design for house magazines and business publications. Contemporary problems in content and production.
- 574. Teaching Methods in Journalism.** (2:2:0) Su. Prerequisite: Journalism 321 or equivalent. Staff
Teaching methods for journalism in the secondary school and junior college. Planning and supervising school newspapers. Disseminating school publicity in the public media.
- 576. School Yearbook and Magazine Production.** (2:2:0) Su. Staff
Planning and supervising production of school yearbooks and magazines, including copy, illustration, layout, printing, binding, and business management.
- 671. Research Methods in Mass Communications.** (2:2:0) F.Su. Smith
Research techniques in communication fields, including readership, readability, content analysis, and audience measurement. Introduction to thesis writing.
- 672. Mass Communication and Society.** (3:3:0) S.Su. Burnett, Smith
Concepts of mass communication in contemporary society; critical evaluation of responsibilities and performance of the mass media of press, radio, television, and film.
- 680. World Communication Channels.** (2:2:0) F.Su. Burnett, Smith
Study of communication media in principal areas of the world. Problems of international communications and barriers to the flow of information between peoples.
- 690. Seminar in Mass Communications.** (1:1:0) S.Su. Staff
- 691, 692. Special Studies in Communication.** (1-3:Arr.:Arr.) F.S.Su. Staff
Individual work on approved problems not leading to a thesis. (Projects must be approved before registration.)
- 694. Readings in Mass Communication.** (1-2:Arr.:Arr.) F.S.Su. Prerequisite: consent of instructor. Staff
- 699. Thesis for Master's Degree.** (2-4:Arr.:Arr.) F.S.Su. Staff

This course also counts in journalism:

Business Management 555. Problems in Advertising. (3:3:0)

Languages

Professors: de Jong, Hansen, Lee, Rogers (chairman, 326 McK), Taylor, Watkins, Wilkins.

Associate Professors: Clark, Gibson, Valentine.

Assistant Professors: Brown, Folsom.

The Department of Languages offers the Master of Arts degree in French, German, Latin, Portuguese, and Spanish.

Requirements

For full graduate standing in French, German, and Spanish, students must have completed courses 101, 102, 201, 301, 321, 322, 441, and 442 in the language chosen as a major or have an equivalent background. No provisional admission may be granted on a lesser background. Minors in these fields must have completed courses 101, 102, 201 and 301 or have a fluent reading knowledge of the language elected. For information concerning Latin and Portuguese, consult the chairman of the department.

The major is in the language and literature of any one of the following languages: French, German, Spanish, Portuguese and Latin. The minor may be in a second language or in another department, subject to the approval of the advisory committee.

FRENCH

Graduate Courses

- | | |
|--|-----------------------------------|
| 520. French Composition and Grammar. (2:2:1) F.S.Su. | Staff |
| 521. Introduction to Romance Philology. (2:2:0) F. (Offered 1964-65 and alternate years) | Clark |
| 522. History of French Language. (2:2:0) S. (Offered 1964-65 and alternate years) | Clark, Lee |
| 543. Introduction to French Civilization. (2:2:0) F.S.Su. | Brown, Clark, Heudier, Lee |
| 660. Old French Literature. (2:2:0) S. (Offered 1963-64 and alternate years) | Clark, Lee |
| 665. French Literature of the Renaissance. (2:2:0) F. (Offered 1963-64 and alternate years) | Brown, Clark, Lee |
| 670. French Literature of the 17th Century. (2:2:0) S. (Offered 1964-65 and alternate years) | Brown |
| 674. Moliere. (2:2:0) S. (Offered 1963-64 and alternate years) | |
| 675. French Literature of the 18th Century. (2:2:0) F. (Offered 1963-64 and alternate years) | Clark, Seely
Brown, Clark, Lee |
| 680. French Drama of the 19th Century. (2:2:0) F. (Offered 1963-64 and alternate years) | Lee, Smithson |
| 681. French Novel of the 19th Century. (3:3:0) S. (Offered 1963-64 and alternate years) | Brown, Lee, Smithson |
| 685. French Literature of the 20th Century. (2:2:0) F. (Offered 1964-65 and alternate years) | Lee, Seely |
| 686. Modern French Drama. (2:2:0) S. (Offered 1964-65 and alternate years) | Lee, Seely |
| 687. Modern French Novel I. (2:2:0) F. (Offered 1964-65 and alternate years) | Brown, Lee, Seely |

- 690, 691. Directed Readings in French. (1-2:1-3:0) F.S.Su. Staff
 692, 693. Seminar in Philology. (1-2:1-3:0) F.S.Su. Staff
 694-698. Seminar in French Literature. (1-2:1-3:0) F.S.Su. Staff
 699. Thesis for Master's Degree. (Arr.) F.S.Su. Staff

GERMAN

Graduate Courses

520. Advanced German Composition and Grammar. (2:2:0) S.Su. Anderson, Rogers
 522. History of the German Language. (2:2:0) S. Prerequisite: Three years of college German or its equivalent. Folsom, Watkins
 600. Cultural History of Germany. (2:2:0) S.Su. Watkins
 622. Gothic and Old High German. (5:5:0) F. Watkins
 Introduction to comparative Germanic philology through a study of linguistic forms in old Germanic languages, principally Gothic and Old High German.
 624. Middle High German. (3:3:0) S. Watkins
 643. German Lyric Poetry. (2:2:0) F. Prerequisites: German 431, 432, 441, 442, or consent of instructor. Anderson, Rogers
 644. The Modern German Drama. (2:2:0) S. Prerequisites: German 431, 432, 441, 442, or consent of instructor. Anderson
 645. The Modern German Novel. (2:2:0) F. Prerequisites: German 431, 432, 441, 442, or consent of instructor. Anderson
 646. The German Short Story. (2:2:0) S. Prerequisites: German 431, 432, 441, 442, or consent of instructor. Anderson
 676. Lessing. (2:2:0) F. Prerequisites: German 431, 432, 441, 442, or consent of instructor. Rogers
 677. Schiller. (2:2:0) S. Prerequisites: German 431, 432, 441, 442, or consent of instructor. Rogers
 678. Goethe. (2:2:0) F. Prerequisites: German 431, 432, 441, 442, or consent of instructor. Rogers
 685. Contemporary German Literature. (2:2:0) S. Prerequisites: German 431, 432, 441, 442, or consent of instructor. Anderson, Rogers
 690, 691. Directed Readings. (2:0:Arr.) F.S.Su. Anderson, Rogers, Watkins
 692, 693. Seminar in Philology. (2:2:0) S.Su. Watkins
 694-698. Seminar in Literature. (2:2:0) F.S.Su. Staff
 699. Thesis for Master's Degree. (Arr.) Staff

LATIN

Graduate Courses

520. Advanced Composition and Grammar. (2:2:0) S. Prerequisites: Latin 322 or equivalent. Clark, Staff
 561, 562. Readings in Medieval Latin. (2:2:0) F.S. Prerequisites: Latin 301 or 112 or equivalent. Clark, Staff
 661. Cicero. (3:3:0) F. Clark

665.	The Latin Historians. (2:2:0) F.S.Su.	Clark, Staff
671.	Virgil. (3:3:0) S.	Clark, Staff
675.	The Latin Poets. (3:3:0) F. Horace, Ovid, Lucretius, etc.	Clark, Staff
679.	The Latin Dramatists. (3:3:0) S. Plautus, Terence, etc.	Clark, Staff
681, 682.	The Latin Fathers. (3:3:0) F.S. Prerequisite: consent of instructor. Nibley	
690, 691.	Directed Readings. (1-2:Arr.:Arr.) F.S.Su. Individual study on a graduate level.	Clark, Staff
692, 693.	Seminar in Philology. (2:2:0) F.S.	Clark, Staff
694-698.	Seminar in Literature. (2:2:0) F.S.	Clark, Staff
699.	Thesis for Master's Degree. (Arr.) F.S.Su.	Staff

PORTUGUESE

Graduate Courses

620, 621.	Portuguese Composition and Conversation. (3:3:0) F.S.	de Jong
641.	Introduction to Portuguese Literature. (3:3:0) F.S. (G-HA)	de Jong
642.	Contemporary Portuguese Literature. (3:3:0) S.	de Jong
650.	Introduction to Brazilian Literature. (3:3:0) F.S.	de Jong
651.	Contemporary Brazilian Literature. (3:3:0) S.	de Jong
690.	Directed Readings. (1-2:0:Arr.) F.S.Su.	Staff
692.	Seminar in Philology. (2:2:0) F.S.	de Jong
694.	Seminar in Literature. (1-2:1-2:0) F.S.	Staff
699.	Thesis for Master's Degree. (1-4:1-4:0) F.S.	Staff

SPANISH

Graduate Courses

521.	Introduction to Romance Philology. (2:2:0) F.	Clark
522.	History of the Spanish Language. (2:2:0) S.	Gibson
552.	Spanish-American Short Story. (2:2:0) F.S.	Valentine, Wilkins
556.	Spanish-American Poetry. (2:2:0) F.S.	Valentine, Wilkins
580.	Nineteenth Century Drama and Poetry. (3:3:0) F.S.	Gibson, Taylor
581.	Nineteenth Century Novel. (3:3:0) F.S.	Gibson, Hansen, Taylor
653.	Spanish-American Drama. (2:2:0) F.S.	Wilkins
654.	Mexican Novel. (2:2:0) F.S.	Hansen, Valentine, Wilkins
655.	South American Novel. (2:2:0) F.S.	Hansen, Valentine, Wilkins
656.	The Modernista Movement. (2:2:0) S.	Valentine, Wilkins
657.	Hispanic American Essay. (2:2:0) F.	Valentine, Wilkins
660.	Spanish Medieval Literature. (2:2:0) S.	Taylor

670, 671. Golden Age Literature. (3:3:0) F.S.	Gibson, Taylor
685, 686. Twentieth Century Literature. (2:2:0) F.S.	Taylor
690, 691. Directed Readings. (2:0:Arr.) F.S. Individual study on a graduate level.	Staff
692. Seminar in Philology. (2:2:0) F.S.Su.	Staff
694-698. Seminar in Literature. (2:2:0) F.S.Su.	Staff
699. Thesis for Master's Degree. (Arr.) F.S.Su.	Staff

Library Science

Assistant Professor: Knight (chairman, 532 JRCL).

The primary purpose of the library science program of graduate classes as it is organized is to provide additional work for school librarians who wish to renew certificates or add to their training so that standards set by accreditation agencies may be achieved.

Public librarians with some undergraduate work and experience may add to their professional training; and students who are preparing to do research in a subject field would find the bibliography courses useful.

No provision is made for awarding the master's degree in library science under the present program, but a minor may be taken in this field.

Graduate Courses

569. Reading Guidance for Young People. (2:2:0) F.Su.	Staff
A critical study of the reading interests and needs of young people. Problems of the reluctant and the avid reader. Extensive examination and reading of books.	
571. Bibliography of the Sciences. (2:2:0) Su.	Staff
572. Bibliography of the Humanities. (2:2:0) S.	Knight
573. Bibliography of the Social Sciences. (2:2:0) S.	Knight
585. History of Books and Libraries. (2:2:0) S.Su.	Staff
650. Current Problems in the Technical Services. (2:2:0) Su.	Staff
695, 696. Readings and Research in Library Science. (1-2:Arr.:Arr.) F.S.Su.	Staff

The following courses are applicable in library science:

Education 605. Development of Instructional Materials. (2:2:1)
Speech 527. Storytelling. (2:2:0)

Mathematics

Professor: Robinson.

Associate Professors: Fearnley, Yearout.

Assistant Professors: Dibble, Hillam (chairman, 289 ESC).

The Department of Mathematics offers courses leading to the Master of Science degree in mathematics for students who are (1) preparing for teaching

careers in high school and junior college; (2) preparing for work in industry or government; or (3) preparing to do additional study and research in mathematics at the Ph.D. level.

Requirements

Graduate students should acquaint themselves with the general Graduate School regulations.

A student is required to present credit in a minimum of 16 semester hours of approved upper division or advanced undergraduate courses in mathematics, including 6 hours of advanced calculus, before being admitted on a degree-seeking basis. A student whose future plans include work in industry should have had a course in Numerical Analysis. Those who plan to pursue Ph.D. work in mathematics should have topology and linear or abstract algebra. A student planning to teach or work in a field related to mathematics would profit by taking a course in statistics.

A candidate for the master's degree in mathematics must complete a minimum of three (full year) courses in graduate mathematics, plus an acceptable thesis. A prospective major should obtain departmental approval on his program before registration.

Graduate Courses

503E. Mathematics for Secondary School Teachers. (3:3:0 ea.) F.S.Su. (On demand) Prerequisite: Teaching experience. Staff

Designed especially for in-service teachers. Emphasis given to the newer materials and trends in teaching mathematics in the secondary schools.

541, 542. Advanced Calculus. (3:3:0 ea.) F.S. Prerequisite: Math 334. Staff

551, 552. Topology. (3:3:0 ea.) F.S. Prerequisite: credit or concurrent registration in Math 541. Fearnley, Hillam

An axiomatic treatment of linearly ordered spaces including properties of closed sets, connected sets, and separable sets, elementary plane topology, metrization, application to analysis.

617, 618. Mathematical Physics. (3:3:0 ea.) F.S. Prerequisite: Math 336; recommended: Math 542. Dibble

Complex variables, transformations, orthonormal systems, integral equations, variational methods.

631, 632. Complex Analysis. (3:3:0 ea.) F.S. Prerequisite: Math 542 or consent of the instructor. Hillam

Complex numbers, derivatives and integrals of holomorphic functions, Cauchy integral theorem and formulas, Taylor and Laurent expansions, analytic continuation, singularities, residues, conformal mapping.

641, 642. Functions of a Real Variable. (3:3:0 ea.) F.S. Prerequisite: Math 542 or consent of the instructor. Fearnley, Hillam

Point sets, measures, measurable functions, Lebesgues integration, Stieltjes integration, absolute continuity.

645. Special Topics in Analysis. (3:3:0 ea.) F.S.Su. (On demand) Prerequisite: consent of the instructor. Hillam, Fearnley

Specialized topics in analysis and function theory. May be repeated for credit.

647, 648. Partial Differential Equations. (3:3:0 ea.) F.S. Prerequisite: Math 334; recommended: Math 542. Staff

General solutions, finite and infinite transforms, boundary value problems in separable coordinate systems, numerical solutions.

655. Special Topics in Topology. (3:3:0 ea.) F.S.Su. (On demand) Prerequisite: consent of instructor. Fearnley, Hillam

Specialized topics in topology. May be repeated for credit.

- 671, 672. Modern Algebra.** (3:3:0 ea.) F.S. Prerequisite: Math 371.
 Robinson, Yearout
 Mappings, semi-groups and groups, rings, integral domains, fields, ring extensions, groups with operators, modules and ideals, lattices and Boolean algebra.
- 675. Special Topics in Algebra.** (3:3:0 ea.) F.S.Su. (On demand) Prerequisite: consent of instructor.
 Robinson, Yearout
 Specialized topics in algebra varied from time to time. May be repeated for credit.
- 681, 682. Linear Algebra.** (3:3:0 ea.) F.S. Prerequisite: Math 671 and Math 672.
 Robinson, Yearout
 Finite dimensional vector spaces over a division ring, linear transformations, bilinear forms, euclidean and unitary spaces, cartesian product spaces, tensor spaces, infinite dimensional vector spaces.
- 695. Readings in Mathematics.** (1-2:1-2:0) F.S. Staff
- 699. Thesis for Master's Degree.** (1-6:Arr.:Arr.) F.S. Staff

These courses also count in mathematics:

Statistics 521, 522. Theory of Statistics. (3:3:0)

Statistics 541. Advanced Probability. (3:3:0)

Mechanical Engineering Science

Professors: Baxter, Simonsen.

Associate Professors: Cannon (chairman), Ulrich.

The areas of graduate study in mechanical engineering are: thermodynamics, heat transfer, gas dynamics, machine design, stress analysis, and vibrations.

Requirements for Entrance

A student working toward a graduate degree in mechanical engineering science should have completed a bachelor's degree (or its equivalent) in mechanical engineering. A student without adequate background will be required to make up the deficiency. A course in differential equations is the minimum mathematics background acceptable.

Graduate Courses

- 511. Intermediate Gas Dynamics.** (3:3:0) Arr. Prerequisite: ME 413 Staff
 Introduction to compressible flow in two and three dimensions including the linearization of the potential equations, small perturbation theory. Method of characteristics and oblique shocks.
- 512. Boundary Layer Theory.** (3:3:0) Arr. Prerequisite: ME 413 Staff
 A study of the fluid mechanics of the boundary layer with particular emphasis on the laminar flow, Navier-Stokes equations, Prandtl's equations, etc.
- 521. Advanced Thermodynamics.** (3:3:0) Arr. Prerequisites: M.E. 422, Math 336. Staff
 Extended treatment of the fundamentals of thermodynamics including transient conditions, equilibrium, current topics.
- 522. Statistical Thermodynamics.** (3:3:0) Arr. Prerequisites: ME 321 and Statistics 321. Staff
 Method of statistical inference, Jaynes formalism, statistical treatment of perfect gases, discussion of temperature, heat, work, friction and thermal properties.

- 531. Principles of Automatic Control.** (3:3:0) Arr. Prerequisites: E.E. 302, Math 334, M.E. 412. Staff
Transfer functions applied to mechanical, hydraulic, pneumatic, and electrical components, and their combination. Block diagrams, Nyquist and Routh Criteria, Bode's and Root Locus Plots, Integral and error rate compensation. Non-linear systems.
- 532. Special Topics in Machine Design.** (3:3:0) Arr. Prerequisite: M.E. 433. Staff
Selected topics in the behavior of engineering materials and advanced mechanics of materials as applied to the design of machine members.
- 533. Stress Analysis in Machine Components.** (3:3:0) Arr. Prerequisites: C.E. 303, Math 336. Staff
Statically indeterminate structures, columns, tension and shear fields, shell analysis, curved beams and rings, buckling of columns and compression panels, torsion analysis of irregular shapes. and combined loads and stresses. Particular emphasis is given to machine components and flight vehicle structures.
- 541. Advanced Heat Transmission.** (3:3:0) Arr. Prerequisite: M.E. 441. Staff
Extension of M.E. 441 to include numerical and approximate methods of solution, transient problems, and solution of problems by analogy methods.
- 581. Internal Combustion Engines.** (3:2:3) Arr. Prerequisite: M.E. 422. Staff
Basic principles; theoretical and actual cycles; performance characteristics with experimental laboratory analysis.
- 583. Principles of Turbomachinery.** (2:2:0) Arr. Prerequisites: M.E. 331, 412. Staff
Analysis and design of all types of turbomachinery.
- 585. Jet Propulsion Power Plants.** (3:3:0) Arr. Prerequisites: M.E. 413, 422. Staff
Analysis of jet propulsion power plants including performance, economics, and matching components.
- 595, 596. Special Problems.** (Arr.) Arr. Prerequisite: consent of department chairman.
- 611. Fluid Dynamics.** (3:3:0) Arr. Prerequisites: Math 317, ME 412. Staff
A study of the basic theories of turbulent flow.
- 612. Gas Dynamics.** (3:Arr.:Arr.) Arr. Prerequisite: ME 511. Staff
A study of theoretical hydrodynamics with particular emphasis on the use of vectors to the analysis of fluid flow.
- 621, 622. Thermodynamics Theory I, II.** (3:Arr.:Arr. ea.) Arr. Prerequisite: M.E. 521. Staff
Brief review of zeroth, first and second laws of thermodynamics. Criteria for equilibrium, meta stable equilibrium, additional unsteady state problems, third law, statistical approach, irreversible thermodynamics, current topics from literature.
- 635. Advanced Vibration Analysis.** (3:3:0) Arr. Prerequisite: M.E. 535. Staff
Vibration characteristics of systems with multiple degrees of freedom; vibrational modes of elastic bodies; random vibrations; simple non-linear systems.
- 636. Advanced Vibrations II.** (3:Arr.:Arr.) Prerequisite: M.E. 535. Staff
Advanced linear vibration theory with special emphasis on approximate methods of analysis of complex systems and topics in non-linear vibration theory. Includes application of advanced theory to problems of current interest.
- 641, 642. Heat Transfer Theory I, II.** (3:Arr.:Arr. ea.) Arr. Staff

- 661, 662. Elasticity in Engineering.** (3:Arr.:Arr. ea.) Arr. Staff
 Fundamental concepts of elasticity theory. Equations of stress equilibrium and strain compatibility. Solution of two-dimensional problems. Photoelastic method of stress measurements. Analysis of stress and strain in three dimensions. Solution of torsion problems. Wave propagation in elastic solids. Particular emphasis is placed upon application to machine design such as stress in bearings, contact stress in machine elements, pressure vessels and thermal stresses. Approximations to the exact theory for specific applications are discussed in detail.
- 697. Research for Master's Degree.** (Arr.) Arr. Staff
- 699. Thesis for Master's Degree.** (1-6:Arr.:Arr.) Arr. Staff

Music

Professors: Gates*, Halliday, Sardoni.

Associate Professors: Goodman, H. Laycock, Nordgren.

Assistant Professors: Bradshaw, Cannon (acting chairman, 260 C) Cundick.

The Department of Music offers graduate programs leading to the Master of Arts and Doctor of Philosophy degrees.

Prospective graduate students are expected to acquaint themselves with all general regulations for advanced degrees as outlined by the Graduate School. Departmental recommendation for full graduate standing is granted to students who possess the baccalaureate degree with a major in music, have at least a "B" average in the last two years of college work, and pass the department graduate entrance examination. This examination presupposes the equivalent of Music 292 and Music 484, 485. Provisional standing may be recommended for a student who has not completed the above general requirements or the specific requirements listed below. Deficiencies in background must be made up, however, before full standing will be recommended.

Candidates for an advanced degree in music education (elementary or secondary) must have completed the general certification requirements or equivalent. Students wishing to take an advanced degree with a major in music theory should possess a baccalaureate degree with a major in music theory or its equivalent. Candidates for an advanced degree in musicology should possess a baccalaureate degree with a major in music theory or its equivalent and should possess a reading knowledge of at least one foreign language, preferably French or German.

Master's Degree

The basic requirements for the master's degree in music are the same as the general Graduate School requirements. Both Option I and Option II are available. Approved fields for study are Music Education, Music Theory, Musicology, and Applied Music (available as a minor field only). Special departmental requirements for the master's degree are as follows:

Music Education: Music 605, 610 or 612, 613, 635, and 693.

Music Theory: Music 613, 635, 686, and 693.

Musicology: Music 613, 635, 637, 638, 639, 675, and 693.

Doctor's Degree

The doctoral program in music is flexible and is designed to meet each candidate's needs. It offers optional emphasis in the areas of Music Education, Music Theory, and Musicology. The Ph.D. curriculum in music includes a total of 80-82 hours of approved course work and research beyond the baccalaureate degree as follows:

1. A core program of 34 semester hours of advanced study in music which provides the framework and basic techniques for systematic learning and research in any area of music. This core consists of the following courses: Music 605, 613, 635, 637, 638, 639, 652, 675, 754, 785, and 791.
2. A major area of emphasis (music education, music theory, or musicology) of 36 hours to be prescribed by the advisory committee, but which will include Music 693, 699, 794 (6 hours), and the writing of an acceptable dissertation based on original research (Music 799, 12 hours credit). Music 686 is also required for students whose emphasis is in music theory.
3. A minor of 10 to 12 semester hours outside the field of music.

A student desiring to pursue the Ph.D. program must pass the department doctoral admissions examination during the first semester of work following the master's degree or by the time he has accumulated approximately forty-five semester hours beyond the baccalaureate degree.

Graduate Courses

- 537x. Music for Elementary School Teachers (Advanced).** (2:2:0) Home Study only. Prerequisites: Music 102, 237. Groesbeck
Experiences in teaching and various music activities in the elementary school.
- 565. Piano Pedagogy.** (2:2:0) S. Prerequisite: Advanced standing as a pianist. Keeler
Methods, materials, and problems in teaching piano.
- 566, 567. Vocal Repertoire.** (1:0:2 ea.) F.S.Su. Prerequisite: Advanced ability as a singer. Weininger
- 568. Vocal Pedagogy.** (2:2:0) S.Su. Prerequisite: Advanced ability as a singer. Weininger
- 569. Organ Pedagogy.** (2:2:0) S. Prerequisite: Music 468. Keeler
- 571, 572. Counterpoint.** (3:3:0 ea.) F.S.Su. Prerequisite: Music 292. Bradshaw, Cundick, Gates
- 581, 582. Orchestration.** (3:3:0 ea.) F.S.Su. Prerequisite: Music 292. Cundick, Gates
- 587, 588. Composition.** (3:3:0 ea.) F.S.Su. Prerequisite: Music 292. Bradshaw, Cundick, Gates
- 601. Music in the Elementary School.** (2:2:0) F.Su. Prerequisites: Music 237 and the equivalent of an elementary education teaching minor in music. Groesbeck
- 603. Music in the Junior High School.** (2:2:0) S.Su. Prerequisite: Music 601. Goodman
- 605. Influence of Music on Behavior.** (3:3:0) F.Su. Prerequisite: general psychology, sociology, or equivalent. Goodman
- 610. Supervision and Administration of Music in the Public Schools.** (2:2:0) S. Su. Goodman
- 612. Music Education in Society.** (3:3:0) S. Prerequisites: Music 484, 485 or equivalent. Goodman
- 613. Basic Concepts in Music Education.** (2:2:0) F.Su. Goodman
Required of all candidates for graduate music degrees.
- 615. Vocal Methods, Materials, and Resources.** (2:2:0) F.Su. Prerequisite: Music 479 or equivalent. Halliday
- 616. Instrumental Methods, Materials, and Resources.** (2:2:0) S.Su. Prerequisite: Music 479 or equivalent. H. Laycock

- 620. Advanced Conducting.** (2:2:0) F.Su. Prerequisites: Music 374, 375 or equivalent. Sardoni
- 625. Summer Music Clinic.** (2:4:4) (Two weeks during clinic) Su. Staff
May be counted as either music education or applied music.
- 635. Musical Research Techniques.** (3:3:0) F.Su. Prerequisite: graduate standing or consent of instructor. Cannon, Earl
Required of all candidates for graduate music degrees.
- 637. Medieval and Renaissance Music.** (4:4:0) F.Su. Prerequisites: Music 484, 485, or equivalent. Cannon
- 638. Music of the Baroque Period.** (3:3:0) S.Su. Prerequisites: Music 484, 485, or equivalent. Cannon, Wakefield
- 639. Classic and Romantic Music.** (4:4:0) F.Su. Prerequisites: Music 484, 485, or equivalent. Cannon, Wakefield
- 641. Special Lectures in Musicology.** (3:3:0) F.S.Su. Prerequisites: Music 484, 485, or equivalent. Staff
- 652. History of Notation and Paleography.** (3:3:0) F. (Offered 1964-65 and alternate years) Prerequisites: Music 484, 485, 637, or equivalent. Cannon
- 656. Hymnology.** (2:2:0) S. Prerequisites: Music 484, 485, or equivalent. Staff
- 660p. Private Instruction.** (2:1:0) F.S.Su. Staff
Fifteen lessons per semester. Special fee.
- 663. Solo Recital.** (2:0:6-10) F.S.Su. Bradshaw
Required of all graduate students minoring in applied music.
- 673. Advanced Problems in Musical Structure.** (3:3:0) F.Su. Prerequisites: Music 491 and 572. Bradshaw
- 675. Materials of Modern Music.** (3:3:0) S.Su. Prerequisite: Music 673. Bradshaw, Cundick, Gates
- 687, 688. Composition.** (3:3:0 ea.) F.S.Su. Prerequisite Music 588 or equivalent. Bradshaw, Cundick, Gates
- 693. Pro-Seminar in Music.** (2:2:0) S.Su. Prerequisites: Music 484, 485, 635, or equivalent, and approval of advisory committee. Cannon, Goodman, H. Laycock
Required of all candidates for graduate music degrees.
- 694. Independent Readings.** (2:0:6) F.S.Su. Prerequisite: Music 693 or equivalent. Cannon, Goodman, H. Laycock
- 695. Independent Readings.** (2:0:6) F.S.Su. Prerequisite: Music 693 or equivalent. Cannon, Goodman, H. Laycock
- 698. Composition for Master's Degree.** (2-6:Arr.:Arr.) F.S.Su. Prerequisite: Approval of the Music Department Graduate Committee based upon evidence of ability in composition as manifested in a preliminary work. Bradshaw
To be submitted in lieu of a thesis by candidates for the master's degree majoring in composition.
- 699. Thesis for Master's Degree.** (2-6:Arr.:Arr.) F.S.Su. Prerequisite: Approval of Music Department Graduate Committee. Staff
Candidates for the master's degree are required to show competence in writing and research before work is begun on the thesis.
- 753. Advanced Problems in Notation.** (3:3:0) S. (Offered 1964-65 and alternate years) Prerequisite: Music 652. Cannon

- 754. History of Musical Instruments.** (3:3:0) F. (Offered 1963-64 and alternate years) Prerequisites: Music 484, 485, or equivalent. Wakefield
- 785. Historical Aspects of Music Theory.** (3:3:0) S. (Offered 1964-65 and alternate years) Prerequisite: Music 292. Nordgren
- 791. Acoustics of Music.** (3:3:0) S. (Offered 1963-64 and alternate years) Prerequisite: Music 292. D. Monson
- 792. Seminar in Music.** (3:3:0) F.S. Prerequisites: Music 693 and approval of graduate advisory committee. Cannon, Goodman, H. Laycock
- 799. Dissertation for the Doctor of Philosophy Degree.** (Arr.) F.S.Su. Prerequisite: Approval of Music Department Graduate Committee. Staff
Candidates for the Doctor of Philosophy Degree are required to show competence in writing and research before work is begun on the dissertation.

Physical Education for Men Physical Education for Women

Professors: Geddes (chairman - men, 248 SFH), Hart, Hartvigsen, Holbrook (chairman - women, 303 WG), Kimball.

Degrees

The Department of Physical Education offers the degree of Master of Arts or Master of Science.

The Master of Arts Degree

The Master of Arts Degree is awarded to those involved with artistic creativity, philosophical and historical methods, and evaluative studies.

The field of physical education calls upon varying skills and abilities. The breadth of the field calls for individuals to serve in varying capacities. They develop individual, school or community projects. They employ artistic and creative methods, they plan events and exert leadership, and they pursue historical, philosophical, interpretative and evaluative studies. According to the interest and the aptitude of the student he thus selects either a project or a thesis in partial fulfillment of the requirements for the Master of Arts Degree.

Project: The project is an application of practical research, artistic performance, creative endeavor or effective planning and leadership. The student works with his advisory committee gaining all approvals and providing final reports which parallel the thesis both in form and in quality.

Thesis: The research is conducted and reported in the approved manner and thesis form.

The Master of Science Degree

The Master of Science Degree is awarded to those concerned with scientific method in observational or controlled experimental study and research in which prediction, relationships, verification and the orderly processes of science are pursued. The field of physical education recognizes the contributions of those who do research in physiology, movement, kinesiology and "sports medicine." These areas are concerned with scientific method consisting of primary emphasis on controlled observation, experimentation, quantification, verification, prediction, and the rational ordering of facts and principles resulting from such pursuits.

Thesis: The research is conducted and reported in the approved manner and thesis form.

Requirements:

The student must satisfy the following requirements:

1. Meet all basic general requirements for the master's degree as outlined by the Graduate School.
2. Receive official acceptance by the department chairman.
3. Have completed the baccalaureate degree with a major in physical education or its equivalent. All major undergraduate courses as required at Brigham Young University, or their equivalency, to be satisfied before the candidate will be accepted on a degree-seeking basis.
4. Successfully pass a general proficiency examination demonstrating competency and sound knowledge of subject matter as covered in the undergraduate degree. Results of the examination to be used by the advisory committee for guidance in the selection of courses and studies leading to the master's degree.
5. Successfully complete among others, the following department graduate courses: 600, 621, 691 and 692.
6. Complete a minimum of 30 semester hours of credit in a combination of major and minor or a major with supporting fields. A suggested apportionment of the credit is indicated:

Major-Minor

15 hours major
9 hours minor
6 hours thesis or
projects and electives

30 Total

Major and Supporting Fields

18 hours major
6 hours two supporting fields
6 hours thesis or project and
electives

30 Total

7. Submit a thesis or project done under the direction of a committee composed of representatives from the major and minor fields. The thesis or project format must conform with standards for written work as recommended by the Graduate School.
8. Perform satisfactorily in a final oral examination on the thesis or project and the professional subject matter area.

The responsibility of knowing and fulfilling school and department regulations and requirements for the master's degree rests with the student.

Graduate Courses

511. **Administration of High School Athletics.** (2:2:0) F. Kimball
Education outcomes of high school athletics, their relationship to the intramural program, the physical education program, the school, and the community as a whole.
514. **Organization and Administration of Intramural Sports.** (2:2:0) F. Soffe
History, present status, and objectives of the intramural movement procedures concerning organization, administration, and supervision of the intramural program.
542. **Physical Inspection.** (1:1:0) S. Staff
Ways of recognizing abnormalities of body function by inspection and test procedures.
543. **Problems in Athletic Conditioning and Injuries.** (2:1:2) F. Prerequisites: Physical Education 341, 446. Staff
570. **Teaching Progression in Individual Sports.** (2:4:0) S. Prerequisite: skills classes or equivalent. Staff
Materials, methods, and teaching progression in individual sports such as archery, badminton, bowling, golf, and tennis.

571. **Teaching Progression in Team Sports—Men.** (2:1:2) F. Soffe
Materials, methods, and teaching progression in team sports such as basketball, football, soccer, softball, speedball, volleyball, and wrestling.
572. **Teaching Progression in Team Sports - Women.** (2:2:2) F. Hirst
Materials, methods, and teaching progression in team sports such as basketball, field hockey, soccer, softball, speedball, and volleyball.
574. **Teaching Techniques in Gymnastics.** (2:1:2) F. Staff
588. **Workshop in Modern Dance.** (2:2:6) Su. Prerequisite: competency in modern dance. Holbrook, Staff
Advanced techniques of supervision in improvisation, and accompaniment.
600. **Curriculum Construction and Supervision in Physical Education.** (3:3:0) S. Hart
Curriculum construction for elementary, secondary, and college physical education with techniques of supervision in improving teacher-student learning situations.
603. **Planning Facilities.** (2:2:0) S. Kimball
Basic planning for facilities for school and community physical education and recreation programs.
621. **History and Philosophy.** (3:3:0) F. Holbrook
Beliefs and practices from early to modern times as related to physical education. Significance and implications of these in view of their effect upon modern educational thinking and cultural uses.
641. **Principles and Practices of Physical Reconditioning.** (2:2:0) F. Prerequisite: Zoology 264. Staff
660. **Measurement and Evaluation of Physical and Health Education.** (3:3:0) S. Prerequisite: Physical Education 464 or equivalent. Hart
673. **Physical Education in the Elementary School.** (3:3:0) Su. Holbrook
For the teacher, the principal, and the supervisor. Emphasis on objectives, interrelationships with the curriculum, and the content material used in accomplishing education results.
691. **Seminar in Administration and Public Relations.** (3:3:0) S. Hartvigsen
692. **Research Methods in Physical Education.** (3:3:0) F. Geddes
694. **Seminar in Readings.** (2:2:0) F.S. Staff
696. **Seminar in Problems.** (1:1:0) S. Staff
698. **Field Project, Master's Degree.** (1-4:0:Arr.) F.S.Su. Staff
699. **Thesis for Master's Degree.** (1-6:0:Arr.) F.S.Su. Staff

These courses also count in physical education on approval of the student's advisory committee:

- Ed. 675. **Organization and Administration of Public Schools.** (3:3:0)
- Ed. 677. **Public School Finance.** (2:2:0)
- Ed. 678. **The Elementary School Principalship.** (2:2:0)
- Ed. 679. **Work of the Secondary School Principal.** (2:2:0)
- Ed. 687. **School Law.** (2:2:0)
- Ed. 550. **Introduction to Guidance Services.** (2:2:0)
- Ed. 554. **Advanced Statistics.** (2:2:0) Prerequisite: E.R.S. 540.
- Ed. 645. **Guidance Testing and Diagnosis** (3:3:0)

- Ed. 656. Advanced Educational Psychology.** (2:2:0)
- Health 521. Evaluation and Selection of School Health Material.** (2:2:0)
- Health 530. First Aid Instructorship.** (2:2:1)
- Health 552. School Health Services.** (2:2:0)
- Health 560. Stimulants and Depressants.** (2:2:0)
- Health 561. Health of the Body Systems.** (3:3:0)
- Psychology 540. Abnormal Psychology.** (3:3:2)
- Psychology 560. Psychology of Learning.** (3:3:0)
- Psychology 628. Psychology of the Physically Handicapped.** (2:2:0) Prerequisite: Psychology 378
- Recreation 503. Administration of School and Community Camps.** (2:2:0)
- Recreation 505. Administration of Community Recreation.** (3:3:0)
- Recreation 607. The Conduct of Playgrounds.** (2:2:0)
- Recreation 609. The Recreation Program.** (2:2:0)
- Sociology 512. Sociology of Education.** (2:2:0)
- Sociology 542. Social Movements.** (2:2:0)
- Sociology 551. Sociology of Recreation.** (2:2:0)
- Sociology 560. Family and Kinship.** (2:2:0)
- Sociology 686. Problems in Race Relations.** (2:2:0)
- Statistics 431. Statistical Methods.** (3:3:0)
- Statistics 531. Experimental Design.** (2:2:0) Prerequisite: Statistics 431 or 521
- Zoology 561. Advanced Vertebrate Anatomy.** (3:1:4)
- Zoology 662. Advanced Physiology.** (2:1:2) Prerequisite: Zoology 365

Physics

Professors: Eastmond, Fletcher, Gardner, R. Hales, W. Hales, A. Hill, McNamara.

Associate Professors: Barnett, Decker, Dixon (chairman, 287 ESC), Dudley, M. Hill.

Assistant Professors: Ballif, Dibble, Nelson, Vanfleet.

The Physics Department offers the degrees of Master of Science and Doctor of Philosophy. The master's degree is often taken by those who intend to continue on for the Ph.D., but it also serves as a terminal degree for many who intend to go into industrial or governmental research or into teaching. The Ph.D. is awarded for a high degree of scholarly achievement in the subject matter of physics and in research. It is not granted simply upon completion of certain routine requirements. General requirements for these degrees are outlined by the Graduate School. Following are special requirements relating to the Department of Physics. The student who expects to continue into a Ph.D. program is advised to begin his planning for it as soon as he enters the Graduate School.

Master's Degree

The basic requirements for the master's degree in physics are the same as the general Graduate School requirements except that a student must take during his first year a written proficiency examination which he must pass before he will be permitted to take the oral examination. The minor requirements for the master's degree may be taken either outside the department or within the department where the student may satisfy a minor in mathematical physics by taking Math 617, 618 and Physics 621.

A student seeking only a master's degree with the intent of going into research or development work would find the courses listed in item B-2 under the Ph.D. requirements to be profitable. However, he may find it to his advantage to substitute some more specialized courses or some undergraduate courses where this can be done in conformity with the regulations of the Graduate School.

MA-3 Program for Secondary and Junior College Teachers

A student who intends to become a teacher in secondary education or in a junior college may find it to his advantage to enter the MA-3 program. This is an accelerated program beginning in the junior year designed to enable a student to (1) obtain a B.A. degree in education with a teaching major in physics and a teaching minor in mathematics at the end of his senior year; (2) obtain an M.A. degree in education with a major in physics and a minor in the Graduate Department of Education with one additional year's study. Prerequisite for the program is Math 111, 112. The curriculum for each of these three years follows (for undergraduate course descriptions, see the general catalog):

Junior Year	Aut.	Spr.	Sum.	Graduate Year	Aut.	Spr.	Sum.
Math 213, 314	5	3		Physics 511	3		
Physics 211, 212, 213, 214	5	5		Physics 551, 552	3	3	
Education 301	2			Two semester physics series such as 527, 528; 561, 562; 621, 625;			
Phys. Science 377		3		671, 591			3
Religion	2	2		Education 601	3		
Math 301, 302	3	3		Education 636			2
Chem. 101, 102			8	Education 639			2
	17	16	8	Education 660			2
Senior Year	Aut.	Spr.	Sum.	Physics 699 (Thesis)			6
Physics 315, 316	5				12	12	6
Math 334	3						
Physics 300			3				
Physics 321, 322	4	4					
Phys. Science 479 ($\frac{1}{2}$ day all sem.)		8					
Education 405			2				
Education 403		4					
Education 310	2						
Health 362	2						
Education 415			2				
Religion	2		2				
	18	16	9				

The student's advisory committee will consist of a chairman from the department of physics and a member from the graduate department of education. Thesis topics will generally be related to the development of new apparatus and techniques for teaching physics. The degree, Master of Arts, is awarded by the Graduate Department of Education.

The program is designed so that the student may, if he desires, spend one or two years in teaching between his senior and first graduate year.

The addition of Education 560 and 610 will qualify the student for a general secondary certificate, or the addition of Education 640, 642, and 644 qualifies the student for a Junior certificate. These could be included in the Summer School curricula.

Doctor of Philosophy Degree

It is expected that the student will meet the general requirements of the Graduate School for advanced degrees. The following special requirements relate to a degree in physics. These automatically satisfy the major and minor requirements of the Graduate School:

A. Admission to Degree-Seeking Status

Study leading to an advanced degree in physics is contingent upon admission to the Graduate School. It is expected that the student shall have satisfactorily completed the following courses or their equivalent: Physics 211, 213, 315, 316, 321, 322, 341, 342, 431, 471, and Math 213, 314, 334, 541, 542. Upon approval by the student's advisory committee some other advanced mathematics series may be substituted for Math 541 and 542. A student may remove any deficiencies by special examination or by registering for any of these courses at the outset of his graduate studies and earning "A" or "B" grades in them. Credit so earned may not be applied toward meeting the requirements for the Ph.D. degree.

A written proficiency examination covering basic undergraduate physics will be scheduled by the department and administered to all full degree-seeking graduate students during their first year of graduate work. A student working towards a Ph.D. degree must receive a favorable evaluation by the faculty on this examination before appearing for the comprehensive examination discussed below.

B. Formal Course Work

1. A minimum of 52 hours in approved course work.
2. The following courses or their equivalents with grade of "A" or "B":
 - a. Mathematical Physics (Math 617, 618).
 - b. Elements of Quantum Theory (Physics 551), and The Atomic Nucleus (Physics 552).
 - c. Dynamics (Physics 621).
 - d. Mathematical Theory of Electricity and Magnetism (Physics 641, 642).
3. At least 9 hours in each of two of the following general fields with grade of "A" or "B":
 - a. **Quantum mechanics**
Courses which will satisfy this requirement are Physics 651, 652, 751, 752; Chemistry 765, 766.
 - b. **Astrophysics**
Courses which will satisfy this requirement are Physics 527, 528, 623, 625, 627, 628, 671.
 - c. **Thermodynamics and statistical mechanics**
Courses which will satisfy this requirement are Physics 623, 631, 632, and, depending upon content, 711, 712, 713; Chemistry 661, 662, 761, 762.
 - d. **Nuclear Physics**
Courses which will satisfy this requirement are Physics 655, 656, and, depending upon content, 711, 712, 713.
 - e. **Acoustics**
Courses which will satisfy this requirement are Physics 561, 562, 563, 564; Electrical Engineering 581, 584, 585, 587.
 - f. **Atomic physics and spectroscopy**
Courses which will satisfy this requirement are Physics 527, 528, 671, 672.

g. Solid state physics

Courses which will satisfy this requirement are Physics 632, 681, 682.

4. Graduate Seminar, for which the student may receive 4 hours credit.

C. Comprehensive Examinations

Before the student is admitted to candidacy for the Ph.D. degree, he must pass a series of written examinations covering the courses in item B-2 and an oral examination covering the two general fields selected under item B-3 which the student has completed. Normally these examinations will be taken toward the end of the second year.

D. Acceptance for Research

Before admission to candidacy, the student must be tentatively accepted as a research student by a member of the faculty of the physics department. The student may become acquainted with research opportunities available by attendance at seminars, lectures, discussions with faculty and other graduate students, etc.

E. Admission to Candidacy

The student is admitted to candidacy after (1) completing two years of graduate study, (2) passing the written proficiency examination, (3) passing the language examinations, (4) passing the comprehensive examinations, and (5) obtaining approval of a subject for the dissertation.

F. Dissertation

The student must present a written dissertation embodying the results of original research judged by his committee to be suitable in whole or in part for publication in a national journal.

G. Defense of Dissertation

The student must give an oral presentation and defense of the dissertation before his committee and others designated by his committee.

H. Fields Presently Available for Original Research

Physics of the Solid State	Plasma physics and
Low-temperature phenomenon	magnetohydrodynamics
Magnetic resonance	Spectroscopy
Micro-wave spectroscopy	Nuclear and Particle physics
Astro-Geophysics	Nuclear structure
Astronomy	Fundamental atomic constants
Planetary physics	Acoustics

Graduate Courses

- 511. Introduction to Theoretical Physics.** (3:3:0) Su. Prerequisites: Math 315, 316. Staff
Introduction to basic principles of physics with emphasis on their mathematical formulation. Topics treated vary from year to year.
- 513. Special Topics in Contemporary Physics.** (1-3:1-3:0) Arr. Prerequisite: consent of instructor. Staff
Various contemporary topics in physics are treated on sufficient demand.
- 527, 528. Introduction to Astrophysics.** (3:3:0 ea.) F.S. (Offered 1964-65 and alternate years) Staff
The physics of stellar atmospheres.
- 551. Elements of Quantum Theory.** (3:3:0) F. Prerequisites: Physics 315; Math 316. Staff
Basic course in modern theory of radiation and particle physics including elementary treatments of relativity theory, quantum mechanics with spectroscopic applications, quantum statistics, solids.
- 552. The Atomic Nucleus.** (3:3:0) S. Prerequisite: Physics 551. Staff
Basic course in nuclear physics including description of nuclear properties; scattering theory, nuclear reactions, elementary theory of the nucleus.

- 561, 562. **Fundamentals of Acoustics.** (3:3:0 ea.) F.S. (Offered 1964-65 and alternate years) Staff
Vibrating systems, transmission phenomena, theory of acoustical radiators, and applications of acoustics.
- 563, 564. **Acoustical Measurements.** (2:2:0 ea.) F.S. (Offered 1964-65 and alternate years) Prerequisite: completion of or concurrent registration in Physics 561 and 562. Staff
Selected experiments in acoustics.
591. **Techniques in Experimental Physics.** (3:2:3) S. Staff
Modern methods in experimental physics with experience in basic shop and laboratory techniques applicable in research.
621. **Dynamics.** (3:3:0) F. Prerequisite: Physics 322. Staff
623. **Dynamics of Continuous Media.** (3:3:0) S. (Offered 1963-64 and alternate years) Prerequisite: Physics 621. Staff
625. **Theory of Relativity.** (3:3:0) S. (Offered 1964-65 and alternate years) Prerequisite: Physics 621. Pre-Staff
- 627, 628. **Advanced Topics in Astrophysics.** (3:3:0 ea.) F.S. (Offered 1963-64 and alternate years) Prerequisite: consent of instructor. McNamara
631. **Advanced Thermodynamics and Kinetic Theory.** (3:3:0) F. (Offered 1963-64 and alternate years) Decker
632. **Statistical Mechanics.** (3:3:0) S. (Offered 1963-64 and alternate years) Decker
- 641, 642. **Mathematical Theory of Electricity and Magnetism.** (3:3:0 ea.) F.S. Prerequisite: Physics 342 Vanfleet
- 651, 652. **Quantum Mechanics.** (3:3:0 ea.) Prerequisites: Physics 551, 621; Math 618. Nelson
- 655, 656. **Nuclear Physics.** (3:3:0 ea.) F.S. (Offered 1963-64 and alternate years) Prerequisite: Physics 552. Dixon
671. **Atomic Spectroscopy.** (3:2:3) F. (Offered 1964-65 and alternate years) Prerequisite: Physics 551 or consent of instructor. Eastmond
672. **Molecular Spectroscopy.** (3:2:3) S. (Offered 1964-65 and alternate years) Prerequisite: Physics 671. Eastmond
- 681, 682. **Modern Theory of the Solid State.** (3:3:0 ea.) F.S. Prerequisites: Physics 431, 551. Decker
- 691, 692. **Seminar.** (1:1:0) F.S. Staff
697. **Research for Master's Degree.** (Arr.) Arr. Staff
699. **Thesis for Master's Degree.** (1-6:Arr.:Arr.) Arr. Staff
- 711, 712, 713. **Advanced Topics in Physics.** (1-3:1-3:0) F.S. Prerequisite: consent of instructor. Staff
Course content varies from year to year. Special topics in theoretical and experimental physics are treated.
- 751, 752. **Advanced Quantum Theory.** (3:3:0 ea.) F.S. (Offered 1963-64 and alternate years) Prerequisite: Physics 652 or consent of instructor. Dibble
- 791, 792. **Seminar.** (1:1:0) F.S. Staff
797. **Research for Ph.D. Degree.** (Arr.) Arr. Staff
799. **Dissertation for Ph.D. Degree.** (Arr.) Arr. Staff

Political Science

Professor: Grow.

Associate Professors: Cannon (chairman, 358 McKay), Mabey, Melville, Reeder.

Requirements

For full graduate standing in this field, a student must have completed approximately the equivalent of an undergraduate major.

A minor may be undertaken with somewhat less background, after consultation with the department.

Graduate Courses

501. **City Planning.** (3:3:0) S. (m) Recommended: Political Science 330; Sociology 423; Geography 522. Staff
The basic problems and techniques involved in city planning.
502. **Public Works and Safety Administration.** (4:4:0) F. (m) Recommended: Political Science 330; and two of the following: Sociology 380, 383, 386; Psychology 350. Staff
The basic factors underlying the efficient operation of police, fire, and public work departments. Sociological and psychological problems involved; organization patterns; public relations; budget; etc.
503. **Public Organization and Management.** (3:3:0) S. (m) Prerequisites: Political Science 330 or with permission of instructor. Snow
Departmental organization of public agencies; organization theory and behavior; communications; authority and control; administrative analysis and survey techniques. Emphasis is given to public setting.
504. **Budget and Fiscal Administration.** (3:3:0) F. (m) Recommended: Accounting 201. Staff
The principles involved in governmental budget and fiscal administration. Emphasis is given at national, state, and municipal levels.
510. **International Project Administration.** (3:3:0) (Offered alternate years) Recommended: Political Science 110, 115, 330; History 120, 121.
The administration of the United States' programs abroad. Problems faced, living conditions, techniques of administration, approaches to education, etc.
532. **Personnel Administration.** (2:2:0) F. (m) Staff
Treatment of processes, procedures, controls, and problems of personnel and fiscal administration in executive branches of federal, state, and local governments.
535. **Municipal Government and Administration.** (3:3:0) S. (m) Grow
Growth, development, and organization of cities; relationship of cities to other governments; problems and activities of modern cities.
557. **Government and History of Canada.** (3:3:0) S. (m) Grow
Growth and development of Canada and the operation of her government.
571. **Development of American Foreign Policy.** (3:3:0) S. (m) Melville
Role of the United States in international affairs from colonial times to the present.
572. **Soviet Foreign Policy.** (2:2:0) S. (m) Mabey, Morrell
Marxist-Leninist concepts of international politics and their practical application including such issues as the Communist International and "peaceful coexistence."

- 575. International Law.** (5:5:0) S. (m) Reeder
Nature and function of international law; recognition, succession, jurisdiction, rights, and immunities of states; nationality and jurisdiction over nationals.
- 580. International Relations of the Far East.** (3:3:0) S. (m) Recommended: Hillam
Political Science 115.
International relations of Asia with emphasis on the problems of imperialism, colonialism, nationalism, and Communism.
- 590. Jurisprudence.** (3:3:0) S. (m) Staff
- 591. Anglo-American Legal Institutions.** (3:3:0) S. (m) Staff
Origins and development of common law and equity, the writ system, court systems, basic legal terms, and anatomy of a law suit.
Problem approach to ancient and modern legal philosophies, with special attention given the nature of justice and the relation of law to morality.
- 593. Administrative Law of the U.S.** (3:3:0) F. (m) Reeder
Legal setting for administrative bodies and judicial control of administrative action. Cases in administrative law read and discussed.
- 595. American Constitutional History.** (3:3:0) F. (m) Prerequisite: Political Science 110. Melville
History and development of the Constitution; study of its fundamental provisions, their interpretation and application in the functioning of the American system of government.
- 601. Modern Political Philosophy.** (2:2:0) S. (Offered alternate years) (m) Midgley
- 605. Roots of American Democracy.** (2:2:0) F. (Offered alternate years) (m) Staff
- 610. American Political Problems.** (2:2:0) F. (Offered alternate years) (m) Staff
- 630. Comparative Public Administration.** (3:3:0) S. (Offered alternate years) (m) Grow
- 640. Formulation and Administration of American Foreign Policy.** (3:3:0) S. (Offered alternate years) (m) Melville, Hillam
The study of the instruments and process of decision making in the formulation of American foreign policy with principal emphasis on the role of the President and the Department of the State.
- 650. Democratic Governments.** (2:2:0) F. (Offered alternate years) (m) Staff
- 651. Totalitarian Governments.** (2:2:0) S. (m) Staff
- 665. International Organization in the 20th Century.** (2:2:0) S. (m) Staff
- 670. International Relations in the 20th Century.** (2:2:0) S. (m) Staff
- 675. Modern International Law.** (2:2:0) S. (m) Reeder
- 690. Supreme Court of the United States.** (2:2:0) F. (m) Staff
- 696. Constitutional Law in the 20th Century.** (2:2:0) F. (m) Reeder
- 698. Directed Readings in Political Science.** (1-2:0:1-2) F.S. (m) Staff
- 699. Thesis for Master's Degree.** (2-4:0:2-4) F.S. (m) Staff

These courses also count in political science:

Geography 522. Urban Geography. (2:2:0)

Economics 575. Government Finance. (3:3:0)

Economics 576. Government and Business. (3:3:0)

Psychology

Professors: Allen, Howell (chairman, 1230 SFLC), Robinson, Taylor.

Assistant Professors: Bennion, Cooper, Cundick, Daniels, Pedersen, Smith.

Special Lecturer: Ficks.

The Department of Psychology offers the following graduate programs leading to advanced degrees: Master of Science degree in general psychology, and school psychology, given in collaboration with the Graduate Department of Education; Ph.D. in clinical psychology; and a Ph.D. in general psychology.

Prospective graduate students are expected to acquaint themselves with all general regulations for advanced degrees as outlined by the Graduate School. Admittance to graduate work in psychology requires completion of the core courses for the undergraduate pre-professional major (general psychology, cognitive processes, motivation, elementary statistics, experimental psychology, sensation and perception, and one seminar) or their equivalent. Before a student is admitted to degree-seeking status he may be required to further demonstrate his competence for graduate work by satisfactory performance on a battery of examinations to be prescribed by the department. All graduate students are required to complete satisfactorily Psychology 670 (Advanced Statistics) and 690 (Seminar: Research Problems).

As part of the training of graduate students, a psychological clinic is maintained by the Psychology Department for the diagnosis and treatment of behavioral and emotional disorders in children and adults. A limited number of selected individuals (other than University students) will be accepted depending on the training needs of the department.

For a graduate minor in psychology the student must have as undergraduate preparation Psychology 111, 311 (or 360 and 365), 370 or equivalent and additional courses to make a total of twelve semester hours. In addition to these twelve hours, he must have a minimum of nine semester hours that will be counted as graduate credit.

Master's Degree

Requirements include: (1) completion of the required number of hours as stipulated by the general Graduate School requirements, including the specific courses required by the department for the school psychologist program, or those prescribed by the student's advisory committee in the general field; (2) a thesis which reports research done under the direction of a committee composed of representatives from the major and minor fields; (3) satisfactory performance in final oral examination on thesis and subject matter.

Doctor of Philosophy Degree with a Major in Clinical Psychology

Requirements for the degree of Doctor of Philosophy include (1) Demonstrated research proficiency through the completion of a master's thesis (equivalent research experience may be approved by the department); (2) completion of the required courses listed below (It is expected that the prerequisite courses will be taken without credit where this is necessary to make up deficiencies.); (3) a minimum of 14 hours in a minor field in a subject related to and supporting general knowledge in psychology, plus sufficient other hours in psychology (including required courses) or related fields to equal at least 74 hours; (4) comprehensive examinations covering major and minor fields. No student is admitted to these comprehensive examinations until he has demonstrated a general breadth of basic knowledge during the first two years of graduate work. Completion of these examinations is necessary before a person can be formally admitted to candidacy for a degree in clinical psychology. (The examination in the major area need not be taken at the same time as that in the minor area); (5) a dissertation embodying the results of original research of professional caliber done under the supervision of the advisory committee; (6) completion of one year of internship in a hospital or institution approved by the department.

Courses Required for a Doctor of Philosophy Degree with a Major in Clinical Psychology

General psychology (18 hours)

- 560. Learning Theory. (3:3:0)
- 585. Advanced Physiological Psychology. (3:3:0)
- 610. Systematic Psychology I: History and Contemporary Thought. (4:4:0)
- 611. Systematic Psychology II: Psychological Theory. (4:4:0)
- 720. Seminar: Clinical Problems of Genetic Psychology. (1:1:0)
- 552. (Soc) Personality: Culture and Society. (3:3:0)

Psychodynamics of Behavior (10 hours)

- 540. Abnormal Psychology. (3:3:2)
- 550. Personality Theory. (3:3:0)
- 651. Problems in Psychopathology. (2:2:0)
- 675. Experimental Psychodynamics. (2:1:4)

Diagnostic Methods (12 hours) Prerequisite: Psychology 378.

- 640. Individual Test Practice. (5:1:8)
- 740. Introduction to Projective Techniques. (2:2:0)
- 741. Rorschach Test Practice. (3:1:8)
- 743. Practicum: Diagnostic Testing. (2:0:6)

Psychotherapy (12 hours) Prerequisite: Psychology 540.

- 680. Introduction to Psychotherapy. (3:3:0)
- 780. Individual Psychotherapy: Practicum. (3:1:8)
- 781. Individual Psychotherapy: Practicum. (3:1:8)
- 782. Group Therapy: Theory and Practice. (3:1:8)
- or
- 783. Play Therapy: Theory and Practice. (3:3:3)

Research Methods (9 hours)

- 574. Advanced Experimental Psychology. (2:1:5)
- 670. Advanced Statistics I. (3:3:0)
- 671. Advanced Statistics II. (3:3:0)
- 690. Seminar: Research Problems. (1:1:0)
- 799. Dissertation (Arr.)

Doctor of Philosophy Degree with a Major in General Psychology

A program for the Ph.D. in general psychology with some concentration in the principal branches of the field is also offered by the Psychology Department. The purpose of this program is to furnish advanced training to students who are primarily interested in research, university teaching, and specialized application of psychology in areas other than the clinical field.

A candidate for this degree will choose a field of concentration from not more than two of the following branches: experimental psychology, physiological and comparative psychology, statistical analysis, psychological measurements, individual differences, learning social psychology, personality, and developmental psychology.

Courses Required for a Doctor of Philosophy Degree with a Major in General Psychology

General Psychology (17 hours)

- 552. (Soc) Personality: Culture and Society. (3:3:0)
- 560. Learning Theory. (3:3:0)
- 585. Physiological Psychology. (3:3:0)
- 610. Systematic Psychology I: History and Contemporary Thought. (4:4:0)
- 611. Systematic Psychology II: Psychological Theory. (4:4:0)

Psychodynamics of Behavior (10 hours)

- 540. Abnormal Psychology. (3:3:2)
- 550. Personality Theory. (3:3:0)

555. (Soc-Psych) Group Dynamics. (2:2:0)
 675. Experimental Psychodynamics. (2:1:4)

Research Methods (9 hours)

574. Advanced Experimental Psychology. (2:1:5)
 670. Advanced Statistics I. (3:3:0)
 671. Advanced Statistics II. (3:3:0)
 690. Seminar: Research Problems. (1:1:0)
 799. Dissertation. (Arr.)

Approximately 30 additional hours chosen by the chairman of the student's advisory committee befitting the particular specialization elected by the student. This list must be approved by the department staff upon the recommendation of the chairman of the committee.

Graduate Courses

510. **The Psychology of Aesthetics.** (2:2:0) S. Prerequisite: Psychology 111. Taylor
 The arts of perceptual stimuli; the nature of artistic creativity; psychological symbolism expressed in the arts; the artist as a person.
540. **Abnormal Psychology.** (3:3:2) S.Su. Prerequisite: Psychology 111 and consent of instructor. Allen, Howell
 Dynamics of maladjustment; implications for normal behavior; review of major and minor psychological disorders; modern therapeutic procedures; field work at Utah State Hospital.
550. **Personality Theory.** (3:3:0) F.S.Su. Prerequisite: Psychology 111, 450, and five additional hours in psychology. Allen, Howell, Smith, Taylor
 A critical review of the contemporary theories of personality that have been developed within the framework of major psychological systems.
555. **(Soc-Psych) Group Dynamics.** (2:2:0) F. Prerequisite: Sociology-Psychology 350. Hardy
 May be used for credit either in psychology or sociology, but not in both. Research and theories in group dynamics.
560. **Learning Theory.** (3:3:0) S. Prerequisites: Psychology 111, 460, and 5 additional hours in psychology. Allen, Taylor
 A critical review of current theories of learning and persistent problems.
574. **Advanced Experimental Psychology.** (2:1:5) S. Prerequisites: Psychology 111, 374, or equivalent. Allen
 Principles of instrumentation; varieties of experimental designs; nature of experimental controls. Gives experience in planning, conducting, and reporting original exploratory experiments.
580. **Comparative Psychology.** (3:3:0) F. Prerequisite: Psychology 111. Staff
 Survey of methods and results of research on animal learning, innate behavior, motivation, individual differences, social behavior, abnormal behavior; correlation of structure with function.
585. **Advanced Physiological Psychology.** (3:3:0) S. Prerequisite: Psychology 111. Staff
 Critical study of physiological processes and psychological functions; physiological mechanisms underlying behavioral processes, including sensation, emotion, sleep and activity, motivation, and learning.
598. **Independent Research.** (1-3:0:2-6) F.S. Staff
606. **Psychology of Music.** (3:3:0) S. Prerequisites: Psychology 111 and Physics 111 or equivalent. Taylor
610. **Systematic Psychology I: History and Contemporary Thought.** (4:4:0) F. Prerequisite: undergraduate core courses. Howell

611. **Systematic Psychology II: Psychological Theory.** (4:4:0) S. Prerequisite: Psychology 610. Howell, Taylor
626. **Mental Deficiency.** (2:2:0) F. Prerequisite: Psychology 378 or equivalent. Allen
627. **Gifted Children.** (1:1:0) S. Prerequisite: Psychology 378. Staff
628. **Psychology of the Physically Handicapped.** (2:2:0) F. Prerequisite: Psychology 378. Taylor
640. **Individual Test Practice.** (5:3:8) S. Prerequisite: Psychology 378. Bennion, Howell, Taylor
642. **Special Clinical Testing.** (2:0:6) S. Prerequisite: Psychology 640. Bennion
651. **Problems in Psychopathology.** (2:2:0) S. Prerequisites: Psychology 540 and consent of instructor. Bennion, Howell
654. **Dynamics of Religious Behavior.** (3:3:0) S. Prerequisites: Psychology 111. Allen, Staff
655. **Psychosomatic Problems.** (2:2:0) F. Prerequisites: Psychology 540 and consent of instructor. Trunnell
662. **Complex Thought Processes.** (3:3:0) F. Prerequisite: Psychology 360. Daniels
665. **Human Motivation.** (3:3:0) S. Prerequisites: Psychology 365 or equivalent; graduate standing in psychology or allied discipline. Hardy
670. **Advanced Statistics I.** (3:3:0) F. Prerequisite: Psychology 370. Staff
671. **Advanced Statistics II.** (3:3:0) S. Prerequisite: Psychology 670. Staff
675. **Experimental Psychodynamics.** (2:1:4) F. Prerequisites: undergraduate core courses and consent of instructor. Staff
678. **Measurement Theory.** (3:3:0) S. Prerequisites: Psychology 370 and 378. Staff
680. **Introduction to Psychotherapy.** (3:3:0) S. Prerequisites: undergraduate core courses and consent of instructor. Bennion, Robinson
690. **Seminar: Research Problems.** (2:2:0) F. Staff
695. **Independent Readings.** (1-2:Arr.:Arr.) F.S.Su. Staff
699. **Thesis for Master's Degree.** (1-6:Arr.:Arr.) F.S.Su. Staff
740. **Introduction to Projective Techniques.** (2:2:0) F. Prerequisites: Psychology 550 and 640. Taylor
741. **Rorschach Test Practice.** (3:1:8) S. Prerequisite: Psychology 740. Bennion, Howell, Robinson
743. **Practicum: Diagnostic Testing.** (2:0:6) S. Prerequisite: Psychology 741. Bennion, Howell
747. **Internship in Clinical Testing.** (2-4:1:5-11) F.S.Su. Prerequisite: Psychology 743. Bennion, Howell
748. **Internship in Clinical Testing.** (2-4:1:5-11) F.S.Su. Prerequisite: Psychology 747. Bennion, Howell
- 750, 751, 752, 753. **Hospital Internship.** (0:0:32) F.S.Su. Prerequisite: Acceptance in doctoral program in clinical psychology. Staff
780. **Individual Psychotherapy: Practicum.** (3:1:8) F.Su. Prerequisite: Psychology 680. Bennion, Howell
781. **Individual Psychotherapy: Practicum.** (3:1:8) S. Bennion, Howell
Continuation of Psychology 780.

782. **Group Therapy: Theory and Practice.** (3:1:8) S. Prerequisite: Psychology 680. Staff
783. **Play Therapy: Theory and Practice.** (3:3:3) S. Prerequisites: undergraduate core courses and consent of instructor. Taylor
790. **Seminar: Clinical Problems of Genetic Psychology.** (1:1:0) S. Prerequisite: consent of instructor. Taylor
791. **Seminar: Personality.** (1:1:0) F. Prerequisite: consent of instructor. Staff
792. **Seminar: Social Psychology.** (2:2:0) S. Prerequisite: consent of instructor, Sociology 350, or Psychology 350. Daniels, Smith
793. **Seminar: Learning.** (1:1:0) S. Prerequisite: consent of instructor. Staff
- 797, 798. **Independent Research.** (1-4:0:3-12) F.S. Prerequisite: consent of instructor. Staff
799. **Ph.D. Dissertation.** (Arr.) F.S.Su. Staff

Recreation

Professors: I. Heaton (chairman, 226 SFH), Hart.
Associate Professor: Packer.

Requirements

An undergraduate major or equivalent in the field and acceptance by the department chairman is necessary for admission.

The master's degree in recreation may be completed by following either the A or B plan. If the student's advisory committee approves the B plan the candidate will take a preliminary and final oral and written examination, and 32 hours of course work approved by his advisory committee.

Upon approval of his advisory committee, a student may elect Option II in filling the minor requirement. A maximum of 12 credit hours of related courses which are approved by the advisory committee may be applied toward the degree.

Graduate Courses

502. **Camping Education.** (2:2:0) S.Su. Packer
503. **Administration of School and Community Camps.** (2:2:0) S. Staff
505. **Administration of Community Recreation.** (3:3:0) S.Su. I. Heaton
507. **The Administration of Playgrounds and Community Centers.** (2:2:0) S.Su. Staff
570. **Recreation for the Ill and Handicapped.** (2:2:0) S.Su. Prerequisite: Psychology 111. Staff
579. **Directed Leadership in Recreation.** (2-6:0:6-18) F.S.Su. Prerequisite: consent of department chairman. I. Heaton
583. **Workshop in Recreational Dance.** (2:2:0) S.Su. A. Heaton
609. **The Recreation Program.** (2:2:0) F.Su. I. Heaton
694. **Seminar in Readings.** (2:2:0) F.S.Su. Hartvigsen
695. **Seminar in Community-School Recreation.** (2:2:0) F.Su. I. Heaton
696. **Seminar in Problems in Recreation.** (1:1:0) S. I. Heaton
698. **Field Project.** (1-4:Arr.:Arr.) F.S. Su. I. Heaton

699. Thesis for Master's Degree. (1-6:Arr.:Arr.) F.S.Su.

I. Heaton

These courses also count in recreation:

Education 564. Arts and Crafts for the Handicapped. (2:2:1)

Education 624. Advanced Arts and Crafts for Elementary Teachers. (2:2:1)

Journalism 561. Public Relations. (3:3:0)

Physical Education 514. Organization and Administration of Intramural Sports. (2:2:0)

Physical Education 570. Teaching Progression in Individual Sports. (2:4:0)

Physical Education 571. Teaching Progression in Team Sports—Men. (2:1:2)

Political Science 504. Budget and Fiscal Administration. (3:3:0)

Political Science 532. Personnel Administration. (2:2:0)

Political Science 535. Municipal Government and Administration. (3:3:0)

Psychology 540. Abnormal Psychology. (3:3:2)

Sociology 551. Sociology of Recreation. (2:2:0)

Sociology 555. (Soc-Psych) Group Dynamics. (2:2:0)

Speech 527. Storytelling. (2:2:0)

Education 619. Directing Out-of-Class Activities in the Secondary Schools. (2:2:0)

Physical Education 603. Planning Facilities. (2:2:0)

Physical Education 691. Seminar in Administration and Public Relations. (3:3:0)

Physical Education 692. Research Methods in Physical Education. (3:3:0)

Psychology 628. Psychology of the Physically Handicapped. (2:2:0)

Sociology and Anthropology

Professors: Ballif, Bradford, Smith, Symons (chairman, 1216A SFLC).

Associate Professors: Christiansen, Dyer, Peterson, Sorenson, Vernon.

Requirements

The Department of Sociology and Anthropology offers training for the Master of Science degree and the Doctor of Philosophy degree. It is expected that graduate students will acquaint themselves with all the general regulations for advanced degrees as outlined by the Graduate School.

Master's Degree

The requirements for the master's degree in sociology include, of course, the general requirements of the Graduate School. A complete statement of rules and procedures of the master's degree program in sociology is available from the department chairman.

Admission to the master's degree program requires a minimum of 15 semester hours in sociology or its equivalent, including courses in introductory sociology, sociological theory, methods of research, and statistics, and the passing of a written screening examination involving the following fields: sociological

theory, statistics, research methods, and social organization-disorganization. Screening examinations must be taken not later than the second week of the student's first semester of residence. The screening examination serves two purposes:

1. It helps to discover those students whose ineptness in the field is such that they should be advised not to continue.
2. It reveals strengths and weaknesses of a given student so that the most meaningful program can be arranged for him.

The week following the examination the student will be notified of his status by his advisory committee chairman (or department chairman if the advisory committee chairman has not been appointed). If the student's performance on the examination is such that he is permitted to continue toward his degree, the department reserves the right to examine him again at a later date in the areas in which his test performance was below standard.

The student must satisfactorily complete the following courses: Sociology 524, 597, 604, and two graduate seminars in sociology plus other courses selected by the student in consultation with his advisory committee. Thirty days after his first registration the student should file with the Office of the Graduate Dean his graduate course program, and before the end of his first semester of graduate study he should file a prospectus of his thesis.

Doctor of Philosophy Degree

Students intending to enter the doctoral program in sociology should obtain from the department chairman a complete statement of rules and procedures. In addition to the general requirements of the Graduate School, a student working toward a doctorate in sociology must fulfill the following specific requirements:

1. Requirements for Admission. For admission to the doctoral program in sociology the student must furnish evidence of having received a master's degree or its equivalent in sociology from an accredited university. In addition, the student must pass screening examinations in the following areas: sociological theory, statistics, research methods, and social organization-disorganization. Screening examinations must be taken by the sixth week of the student's first semester of residence. The department may then prescribe remedial work or other requirements as a condition for admission. The student must complete such work with a grade of "B" or better.

2. Student's Advisory Committee. The members of the advisory committee are nominated by the student in consultation with the department chairman and with the approval of the dean of the Graduate School. Four men from the department plus one from outside the department comprise the advisory committee.

3. Major and Minor Fields. The student must have two major fields within sociology, one of which must be research methods. A major field is a field of study in which the student specializes both in respect to teaching and research. It is presumably the field in which the dissertation is to be written and upon which the professional career is to be based.

The student must have two minor fields, one of which may be selected from another department in lieu of one of the minor fields in sociology. A minor field is construed as a field of study in which the student may teach and/or conduct research creditably. It is not the substantive field, however, in which his competence is most highly developed.

The major fields must be selected from the following: deviant behavior, research methods, social organizations, and sociological theory. With the exception of research methods, the minor fields may be selected from the preceding and the following: demography, family, rural sociology, and social psychology.

A student may elect to have a minor in a field not listed above. To do so he must submit a proposed program of study to his advisory committee at least 12 months in advance of the comprehensive examinations. This committee, with the approval of the members of the department, may authorize an alternate minor field in sociology.

4. Comprehensive Examinations. The student must pass comprehensive examinations after the completion of prescribed course work and at least one year prior to the granting of the degree. Unless a minor is selected in another department, the examinations are in four of the above fields of sociology, two of which must be (a) sociological theory and (b) research methods.

Requirements for a Minor in Sociology

A student working toward a master's degree completes the departmental requirements for a minor in sociology by satisfactorily completing Sociology 604 plus graduate semester hours in areas related to his major specialization in his field as approved by his advisory committee, a member of which is from the Department of Sociology and Anthropology.

A student working toward the doctoral degree with a major in another department and with a minor in sociology takes a preliminary screening examination, after which a committee member from the Department of Sociology and Anthropology, with the approval of the other members of the department, outlines a program in accordance with the needs of the student.

Graduate Courses Grouped According to Major-Minor Fields

The following courses are grouped according to the major and minor fields of the doctoral program in sociology. The courses in each field are recommended, but they must be supplemented by other study as defined by the student's advisory committee. Minimum essential bibliographies for these fields are available.

Demography (minor only)	Research Methods (major only)	Social Psychology (minor only)
620	524	542
623	561	552
	597	555
	701	792
Deviant Behavior (major or minor)	Rural Sociology (minor only)	Social Organizations (major or minor)
591	612	512
670	693	516
686		570
Family (minor only)	Sociological Theory (major or minor)	580
560	604	626
660	791	696

Graduate Courses

- 512. Sociology of Education.** (2:2:0) S. Smith
 Analyzes principles of sociology of education and their implication for theory and practice of school administration, curricula, and methods of instruction.
- 516. Sociology of Religion.** (2:2:0) F. Vernon
 Analyzes influences of social factors in development of various religious systems.
- 524. Advanced Social Statistics.** (3:3:0) F. Prerequisite: Sociology 111. Christiansen
 Advanced course designed for those who intend to do research or continue in graduate work.
- 542. Social Movements.** (2:2:0) S. Payne
 Discuss social aspects of various movements from Adam Smith to John Dewey with special emphasis on social reform movements in the United States.

- 543. Social Legislation.** (2:2:0) S. (Offered 1963-64 and alternate years) Ballif
Basic problems and techniques of social legislation. Analyzes various systems now in operation.
- 550. Social Aspects of Physical Disability.** (3:3:0) S. (m) Staff
Human relationships and social interaction in the life of the physically handicapped, plus the study of special governmental and social agency attention to their needs and well-being.
- 551. Sociology of Recreation.** (2:2:0) S.Su. Payne
Treats relations of recreational interests to growth, group behavior, and social maladjustments. Emphasizes basic theories of recreative activities.
- 552. Personality: Culture and Society.** (3:3:0) F. Prerequisite: Sociology 111 or Psychology 111. Christiansen, Dyer
- 555. (Soc-Psych) Group Dynamics.** (2:2:0) S. Prerequisite: Sociology 350. Dyer
Analyzes research and theories of group dynamics.
- 560. Family and Kinship.** (2:2:0) S. (Offered 1963-64 and alternate years) Bradford, Christiansen
Emphasizes the family in several different societies and problems created by various family systems.
- 561. Contemporary Sociological Research.** (2:2:0) S. (Offered 1964-65 and alternate years) Peterson
- 570. Class, Status, and Power.** (2:2:0) F. (Offered 1963-64 and alternate years) Prerequisite: Sociology 111. Peterson
Analyzes the major status and class systems in various societies. Also discusses power relations in such systems.
- 580. Social Relations in Medical and Health Organizations.** (2:2:0) S. (m) Peterson
Analyzes the structure of medical and health organizations. Designed for pre-medical, pre-dental, health education, and nursing students.
- 591. Seminar in Crime Causation and Treatment.** (2:2:0) F.Su. Prerequisites: Sociology 111, 380. Smith, Symons
Considers the major causes of crime and analyzes prevalent theory and techniques of treatment criminals.
- 595. Directed Readings.** (1-3:0:2-6) F.S.Su. Staff
Readings in special areas.
- 596. Directed Readings.** (1-3:0:2-6) F.S.Su. Staff
Readings in special areas.
- 597. Advanced Research Methods.** (3:3:0) S. Prerequisite: Sociology 497. Peterson
Analyzes methods used in investigation of sociological data. Field projects give the student actual experience in research.
- 604. Seminar in Sociological Theory.** (2:2:0) S.Su. Prerequisites: Sociology 404 and 405. Bradford, Dyer
An advanced course in sociological theory.
- 612. Problems in Rural Society.** (3:2:1) F. (Offered 1964-65 and alternate years) Prerequisite: Sociology 423, or consent of instructor. Christiansen
Field type training, with on-the-job contacts with county agents, et. al. Findings from these contacts will be the class room material.
- 620. Problems in Demography.** (3:3:0) F. (Offered 1964-65 and alternate years) Prerequisite: Sociology 420, or consent of instructor. Staff
Current population problems of local, state, national, and international significance will be considered. Complications involved in local and state trends will receive special attention.

- 623. Demographic Analysis.** (3:3:0) S. (Offered 1963-64 and alternate years)
Prerequisite: Sociology 420 and 620. Staff
The discipline of demography, with its special methods and procedures will be analyzed. Major current research in the field will receive careful coverage.
- 626. Contemporary Urban Social Structure.** (3:3:0) S. (Offered 1964-65 and alternate years) Prerequisite: Sociology 426, or consent of instructor. Smith
This course will be a research oriented examination of social forces in contemporary urban life which influence patterns of human interaction.
- 660. Familial Role Structure.** (3:3:0) S. (Offered 1964-65 and alternate years)
Prerequisite: Sociology 403. Bradford
Analysis of the various roles in the family, with their attendant characteristics and problems, in various societies, but particularly in the United States.
- 670. Social Structure of the Mental Hospital.** (3:1:4) F. Prerequisite: consent of instructor. Vernon
In cooperation with the Utah State Hospital, students participate in an analysis of the relationship between social structure of the hospital and patient behavior.
- 686. Problems in Race Relations.** (2:2:0) F. Ballif
Considers significant problems of a specialized nature in the field of race relations.
- 693. A Study of Contemporary Rural Sociological Research.** (3:3:0) S. (Offered 1962-63 and alternate years) Prerequisites: Sociology 423 and 612. Christiansen
Basic analysis of principles of rural sociology. Also review of leading research in the field. Research designs will be planned and some limited research done.
- 694. Directed Research.** (1-3:0:2-6) F.S.Su. Staff
Research in special areas.
- 696. Seminar in Industrial Sociology.** (3:3:0) S. (Offered 1964-65 and alternate years) Prerequisite: Sociology 446. Dyer
Designed to give added insight by careful attention to current trends in industry, labor-management developments, government, participation, etc.
- 699. Thesis for Master's Degree.** (1-4:Arr.) F.S.Su. Staff
- 701. Advanced Statistical Methods.** (2:2:0) S. (Offered 1963-64 and alternate years) Prerequisites: Sociology 320, 524. Christiansen, Peterson
Consideration of advanced statistical techniques such as scalogram analysis, factor analysis, and latent structure analysis.
- 791. Seminar: Social Organization.** (2:2:0) F. Prerequisites: Sociology 111, 405. Dyer
Comprehensive examination of major theories of organization with emphasis upon theory construction.
- 792. Seminar: Social Psychology.** (2:2:0) S. Prerequisites: consent of instructor; Sociology 350. Vernon
Designed to give advanced work to graduate students. Gives special emphasis to group processes and socialization.
- 796. Special Research Problems.** (1-3:0:2-6) F.S.Su. Staff
- 797. Special Research Problems.** (1-3:0:2-6) F.S.Su. Staff
- 799. Dissertation for Ph.D.** (Arr.) F.S.Su. Staff

Statistics

Professor: Nielson.*

Associate Professor: Carter (chairman, 342 JKB).

A graduate degree is not currently offered in statistics, but a graduate minor may be taken in this field.

Graduate Courses

- 521, 522. Theory of Statistics.** (3:3:0 ea.) F. S. Prerequisite: Math 213 or concurrent registration; recommended: Statistics 221 or 321. Staff
- 531. Experimental Design.** (3:3:0) S. Prerequisite: Statistics 221, 321 or 521; recommended: Statistics 331. Carter
- 541. Advanced Probability.** (3:3:0) S. Prerequisite: Math 213, Statistics 341 or 521. Staff

These courses also count in statistics:

Animal Husbandry 601. Experimental Animal Techniques. (2:2:0)

Psychology 670, 671. Advanced Statistics I and II. (3:3:0)

Sociology 701. Advanced Statistical Methods. (2:2:0)

*On leave 1963-64

Zoology and Entomology

Professors: Beck (chairman, 280 B), Hayward, V. Tanner, W. Tanner.

Associate Professors: Allen, Allred, Chapman, Frost, Wood.*

Assistant Professors: Jaussi, Murphy.

Requirements for Graduate Degrees

A prospective graduate major is expected to satisfy all the general requirements for advanced degrees outlined by the Graduate School. Before or during the first semester the student is officially admitted to graduate study in the department, the departmental graduate standards committee will administer an examination designed to explore his academic background and aptitude. Recommendations to assure adequate depth and breadth of training based on an evaluation of this examination and his undergraduate record of courses will be used by the advisory committee in planning the program of graduate study. Deviations from these recommendations must be approved by the graduate standards committee. Prior to the selection and approval of the advisory committee, the graduate standards committee will direct the student's program. The responsibility for complying with all regulations of the Graduate School and of the department rests with the student. All graduate students are expected to attend Graduate Seminar every semester.

The Department of Zoology and Entomology offers work leading toward the Master of Science and the Doctor of Philosophy degrees in zoology and in entomology. A student may major in either of these fields. Either one or two minors may be selected, and it is recommended that at least one of the minors be chosen from a department other than zoology and entomology.

A student may do research in specific areas in zoology or in entomology. In zoology, advanced training and research are available in ecology, embryology, genetics, herpetology, histology, ichthyology, mammalogy, invertebrate zoology, ornithology, parasitology, physiology, radiation biology, and vertebrate anatomy.

In entomology, advanced training and research may be pursued in general entomology, taxonomy, morphology, ecology, and medical entomology.

Master's Degree

The Master of Science degree is offered by the Department of Zoology and Entomology. The general requirements indicated above apply to students seeking this degree.

Doctor of Philosophy Degree

Required courses for each candidate for this degree include the following: Zoology 510, 540, 555, 578, 610, 680, 696, and 697. A comprehensive preliminary examination, oral and written, covering all areas of basic zoology or entomology with emphasis on the major and minor fields must be successfully completed before advancement to candidacy. This examination normally is taken approximately one academic year prior to granting of the degree. The candidate is expected to spend a summer term or equivalent away from Brigham Young University at an approved laboratory or field station.

Graduate Courses

510. **Zoological Literature.** (2:1:2) S. Wood
An introduction to the literature of zoology designed to prepare the student for research and thesis writing.
524. **Acarology.** (2:0:6) F. (Offered 1964-65 and alternate years) Prerequisite: Zoology 421. Allred
531. **Insect Physiology.** (2:1:2) S. (Offered 1963-64 and alternate years) Wood
533. **Field Entomology.** (2:0:4) Su. Prerequisite: consent of instructor. Staff
538. **Immature Insects.** (2:0:4) S. Staff
540. **Aquatic Ecology.** (3:2:3) F. Prerequisites: Zoology 451 or Botany 450. Murphy
555. **Principles of Zoogeography.** (2:2:0) F. W. Tanner
- 561, 562. **Advanced Vertebrate Anatomy.** (3:1:4) F.S. Prerequisite: Zoology 363. Chapman, W. Tanner
564. **Neurology.** (2:1:4) S. Prerequisite: consent of instructor. Chapman
565. **Endocrinology.** (3:3:0) Prerequisite: Zoology 465. Jaussi
573. **Experimental Embryology.** (2:1:3) S. (Offered 1963-64 and alternate years) Prerequisite: Zoology 373. Allen
578. **Radiation Biology.** (2:2:0) F. (Offered 1963-64 and alternate years) Prerequisites: Chemistry 112; Physics 202; Zoology 465. Allen
579. **Radiation Biology Laboratory.** (2:0:6) F. (Offered 1963-64 and alternate years) Prerequisite: concurrent registration in Zoology 578. Allen
- 591, 592. **Special Problems in Zoology.** (1-2:Arr.:Arr.) F.S.Su. Staff
- 594A, B. **Seminar in Genetics.** (2:2:0) F. (Offered 1964-65 and alternate years) Prerequisite: Zoology 376 or Botany 376. Allen
610. **Systematic Zoology.** (2:1:2) F. Staff
612. **Advanced Invertebrate Zoology.** (2:0:4) F. Prerequisite: Zoology 540. Beck
625. **Advanced Medical Entomology.** (2:0:4) S. Prerequisites: Zoology 332, 346, 347. Beck
628. **Ecology of Parasitic Arthropods.** (2:1:3) S. (Offered 1963-64 and alternate years) Prerequisites: Zoology 433, 451. Allred

639. **History of Entomology.** (1:1:0) F. V. Tanner
643. **Advanced Ichthyology.** (2:1:2) F. (Offered 1963-64 and alternate years)
Prerequisite: Zoology 343. V. Tanner
645. **Advanced Herpetology.** (2:1:2) S. (Offered 1963-64 and alternate years)
Prerequisite: Zoology 345. W. Tanner
- 694.A, B. **Advanced Topics in Ornithology and Mammalogy.** (2:2:0) F. Pre-
requisites: Zoology 346, 347. Frost, Hayward
650. **Animal Communities.** (2:2:0) S. (Offered 1963-64 and alternate years)
Prerequisite: Zoology 451 or Botany 450. Murphy
- 662, 663. **Advanced Physiology.** (2:1:2) F.S. Prerequisite: Zoology 465. Jaussi
670. **Advanced Histology.** (2:0:4) F. Prerequisite: Zoology 370. Chapman
680. **Theoretical Zoology.** (2:2:0) S. Prerequisite: consent of instructor.
W. Tanner
- 691A, B, C, D. **Research.** (1-4:Arr.:Arr.) F.S.Su. Staff
- 695A, B. **Seminar in Embryology.** (2:2:0) S. (Offered 1964-65 and alternate
years. Allen
- 696, 697. **Graduate Seminar.** (1:1:0 ea.) F.S. Staff
699. **Thesis for Master's Degree.** (2-4:Arr.:Arr.) F.S.Su. Staff
797. **Research.** (2-4:Arr.:Arr) F.S.Su. Staff
799. **Dissertation for Ph.D. Degree.** (Arr.) F.S.Su. Staff

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